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## **AGRICULTURAL ACCOUNTING SYSTEMS SUPPORTING FARM FINANCIAL MANAGEMENT - THE CASE OF POLISH FADN**

### **Abstract:**

There is a limited number of research papers referring to the question how accounting systems affect economic and financial results of farms. The aim of this paper was to assess how agricultural accounting systems may support farm financial management, based on a case of Polish Farm Accountancy Data Network (Polish FADN). We presented the evolution, the current state and challenges for development of agricultural accounting in Poland. Selected features of FADN, taking into account the legal and organizational aspects were presented. Particular attention was paid to some aspects of usefulness of Polish FADN from the perspective of farm financial management (a micro focus). This study used multiple methodologies (mainly, elements of case study), to gather evidence. The FADN system in Poland brings several direct and indirect benefits, both at micro (for farmers) and sectoral levels. Individual Farm Report may support financial planning, but inflow of some detailed data on costs/margins may be very useful. The necessary rationale for using FADN system for supporting financial management is the strong need for providing more detailed data within the accounting system.

### **Keywords:**

agricultural accounting, financial management, farm, FADN, Polish agriculture

**JEL Classification:** M41, Q14, Q18

## 1 Introduction

The complex and subtle relationships between the use of accounting systems (record-keeping combined with financial reporting) and financial performance has been explored in the non-agricultural sectors (in particular, listed companies or even small businesses). For example, there is empirical evidence that owners of small business owners in the U.K. cooperate with their accountants. However, a plethora of accounting information, then structured financial data, produced by the accounting system may not even be fully utilized by managers (Sian and Robert, 2009).

It should be noted that a wide research gap referring to the agricultural sector still exists. In agriculture, compared to other sectors of economy, financial management is strongly determined by unique determinants of agricultural production that are described in literature on agricultural economics/finance and farm management (Barry, 2003; Doluschitz, Morath, and Pape, 2011; Mußhoff and Hirschauer, 2011; Barry and Ellinger, 2012). There is a limited number of research papers referring to the question how accounting systems affect economic and financial results of farms. In particular, American literature on agricultural finance (for example: Gloy, Hyde, and LaDue (2002), Wolf, Lupi and Harsh (2011)) shed light on some aspects related to the usefulness of data generated by accounting systems in the U.S. Wolf, Lupi, and Harsh (2011) found that 'university' and 'agribusiness clients operated larger farms' tend to be more likely to use farm cash/accrual financial record systems. Nonetheless, Halabi and Carroll (2015) stated that accountants view some limitation for usefulness in 'present financial reports provided to farmers'. However, traditional accounting systems in agriculture ignoring reporting how farms achieve environmental goals. Hence, Polman et al. (2015) proposed inclusion of 'natural capital' in report generated by farm accounting systems, given the fact that "keeping record of (evolution in) natural capital can give an advantage to farmers as users of the data" (p. 9/10).

Financial management may be defined as "the process of obtaining, using, and controlling the use of capital – both cash and credit" (Olson 2011, p. 222). Furthermore, Barry and Ellinger (2012, p. 1) convincingly state that the financial management, deals with "use of financial resources and the protection of equity capital". This means that, in particular, financial management of farm household, deals with macroeconomic determinants and microeconomic basis for decision-making processes. Barry and Ellinger (2012, p. 3-7) enumerate a set of various tools of financial management: (1) 'strategic management process', (2) 'information flows', namely 'internal and external information aid', (3) analytical methods, (3) financial markets and institutions. In particular, contemporary financial management processes base on information inflow. In countries (for example most CEECs, incl. Poland) where the agricultural sector is subject to structural transformations, as a rule, there is the problem of existing information gap. This results from the limited development of agricultural accounting systems, and, consequently, utilizing financial information for the purposes of management accounting and financial management.

The aim of this paper is to assess how agricultural accounting systems may support a farm financial management, based on a case of Polish Farm Accountancy Data Network (Polish FADN). It should be added that the fundamental concept of the FADN refers to general solutions at the level of European Union (EU). This article is structured as follows. Section 2 presents the

evolution, the current state and challenges for development for agricultural accounting in Poland. Section 3 indicates selected features of FADN, taking into account the legal and organizational aspects. This section also discusses some aspects of usefulness of Polish FADN from the perspective of farm financial management (a micro focus). Our article concludes with proposals and recommendations.

## **2 The agricultural accounting system in Poland – evolution, current state and challenges for development**

In Poland the beginnings of modern agricultural accounting, and, as a result, solutions in the field of financial management (in particular, planning) dates back to the early twentieth century. For example, in the U.K. some surveys on the income situation of farms (Farm Management Survey, FMS) were organised by the Ministry of Agriculture in the 1930s (Brassley et al., 2013). Polish large-scale manors ('gospodarstwa folwarczne') were obliged to pay income tax at the onset of World War II. Moreover, a basis of reporting system depicting income situation of Polish agriculture was gradually created. Unfortunately, World War II and transformation into a socialist economy meant a breakdown of works on the dissemination of record-keeping in Polish agriculture (Kondraszuk, 2008). The consequences are very negative both at micro at mezo/macro levels.

The construction of Polish law concerning record-keeping (in order to map business processes in enterprises) does not impose on Polish farmers obligation to keep accounts. This also applies to situations where a farmer fully engaged in agricultural activity generates income which, in accordance with the Accounting Act of 29 September 1994, as amended (known as, in original: 'Ustawa z dnia 29 września 1994 r. o rachunkowości z późn. zm.')

should oblige him to keep accounting ledgers (the equivalent in Polish currency 1 200 000 euro, see: art. 2, paragraph 1, item 2 and 6 of the Accounting Act of 29 September 1994). Revenues from agricultural activities do not affect the threshold to limit bookkeeping duties in contrast to doing business in another area. There are some exceptions to the aforesaid regulations: households operating as legal entities, which, in accordance with applicable law, are subject to the abovementioned Accounting Act.

It should be noted that since the Polish accession to the European Union (EU) Poland, in accordance with the Council Regulation No 79/65 EEC of 15 June 1965, a modern agricultural accounting system of FADN (Farm Accountancy Data Network) (The Law, Dz. U. No. 3, 2001 pos. 20) has been implemented. However, that the participation of the farmer in this system is voluntary, which may significantly reduce the usefulness of this system (at the sectoral and macro levels). This situation results in the fact the Polish agriculture is lacking reliable data that may be used for describing the economic situation of the sector. It also translates into limited possibilities of farm management. In the current situation, keeping accounting records by farmers is mainly due to an acute need to obtain credits/loans (if required by financial institutions). The second vital prerequisite may be an access to agricultural counselling services offered by agricultural advisors. Less frequently keeping accounting books is motivated by, to a certain degree, usefulness for farm management (a deeper understanding of economics of farms, analysis of the structure and the level of costs incurred).

The situation has changed after the introduction of VAT in agriculture (Value Added Tax of 1 March 2003). Farmers who receive annual net sales exceeding 800 thousands euro and farmers who voluntarily opt for this form of settlement of the aforesaid tax, are obliged for the settlement of this levy. The rest of the so-called „farmers preferring settlements based on lump-sum”.(‘rolnicy ryczałtowi’) were exempted from VAT. Moreover, a flat-rate payment of reimbursement considered by entities that purchase products from farmers compensates for tax (paid by farm owners) that is included in the prices of goods and services purchased for agricultural production (Kujawsko-Pomorski Ośrodek Doradztwa Rolniczego w Minikowie, 2016). The implementation of such a tax in agriculture has various consequences. Among others, VAT has not to be treated as an eligible cost when applying for external financing from EU funds (Ginter, 2011). This situation has become as a stimulating factor. Farmers are obliged to keep records of purchase and sales in order to account for VAT (Chmielewski, 2008). Moreover, agricultural producers are forced to collect all necessary financial documents. However, it should be underlined that these abovementioned law regulations related to settlement of VAT do not constitute ‘business style’ accounting on an accrual basis. Some simplified solutions do not fully satisfy/meet farmers’ decision-making needs. Still, this approach may be treated as an important step on the way to use „full” record-keeping system and treat it as a base for financial decisions.

After having analysed the development of accounting in Poland, it should be noted that the situation in Polish agriculture is not substantially different from the older Member States (EU-15). The experience of the EU-15 indicates that accounting for VAT on general principles in agriculture has resulted in a significant increase in the number of farms that keep accounting records. However, the complex process of implementation accounting for the farm does not solve the majority problems making decisions at farm level. After all, the effectiveness of the accounting systems depends on the type of data collected and use of data supplied by these abovementioned systems. Moreover, it should be underlined that separating data collected for financial accounting from data necessary for decision-making processes at every level of economic activity seems to be essential for the so-called management accounting. Such a tool designed for business needs may support the decision-making processes at every level of management. Thus, this may assist farm managers in carry on functions of management (not only information and control function, but also planning and motivation) (Kiziukiwicz (Ed.), 2003).

The experience from EU countries indicates that two events which contributed to the increase in the number of farms keeping accounting records were essential for the development of the accounting important. This refers to the introduction of VAT and the implementation of income tax. The experience from Polish agriculture can confirm this statement. A significant increase in investment activity results in a growing interest of Polish farmers in VAT settlement on general terms. Consequently, the number of farmers who will be obliged to keep records of sales and purchases may be increasing. However, the issue of income tax in the Polish agriculture is still unresolved and very sensitive in economic and political terms. This may result from the lack of necessity to keep accounting ledgers at the farm level. It should be emphasized that keeping the register for VAT purposes is relatively easy. Hence, this may be treated as a step towards to a more detailed accounting for the settlement of income tax.

### 3 The usefulness of the Polish FADN for financial farm management

The legal basis for the structure of FADN has been created by European law, including, above all Council Regulation 79/65/EEC of 15 June 1965. It should be added that this legislation has been slightly modified: the current Council Regulation (EC) No 1217/2009 of 30 November 2009 has “set up a network for the collection of accountancy data on the incomes and business operation of agricultural holdings in the European Community” (European Commission, 2016).

As for the Polish FADN that is a national component of EU FADN, of particular importance was adopting by the Polish Sejm „an Act on the collection and use of accountancy data from agricultural holdings“ (Ustawa z dnia 29 listopada 2000 r. o zbieraniu i wykorzystywaniu danych rachunkowych z gospodarstw rolnych Dz. U. 2001 nr 3 poz. 20). This legal act describes tasks of the Polish FADN, including the role of the National Committee and the Liaison Agency (Polish FADN, 2016). Since May, 1, 2015, the system of Polish FADN (known as ‘System Zbierania i Wykorzystania Danych Rachunkowych z Gospodarstw Rolnych’) has been providing data that may be useful for a wide range of stakeholders (both external bodies and internal stakeholders, i.e. farm operators).

The EU has implemented a uniform system of agricultural accounting, given the fact that expenditures of the CAP constitute a dominant position in the EU budget. Hence, the results of the FADN system should be treated as a necessary and indispensable tool used for programming and implementation of CAP measures. Data collected as part of this structure are used primarily to determine the annual income of farms operating in the EU. European FADN comprises “an annual survey carried out by the Member States of the European Union” (European Commission, 2016).

The use of FADN data and reports may be very broad and includes realisation of the following objectives (Goraj and Olewnik (Eds.), 2014):

- to analyse the economic activities of farms,
- to assess the overall situation of agriculture and agricultural markets,
- to evaluate the impact of the proposed changes in the EU agriculture.

The FADN plays an important role in assessing the situation of the agricultural sector. This is due to the fact that “Farm Return”, a main document that is prepared by National Liaison Agency, includes various categories of structured data: (1) ‘physical and structural data, such as location, crop areas, livestock numbers, labour force, etc.’, (2) ‘economic and financial data, such as the value of production of the different crops, stocks, sales and purchases, production costs, assets, liabilities, production quotas and subsidies, including those connected with the application of CAP measures’ (European Commission, 2016). This means that policy makers may use relatively large resources of reliable and verified information in different sections, which allows them to assess the effects of potential changes in the Common Agricultural Policy (but also in national agricultural policies).

It should be noted that currently the field of observation of Polish FADN includes about 738 thousand agricultural holdings, which ensured covering 89,5% of total Standard Output (SO) in Poland. The SO is defined as “the average monetary value of the agricultural output at farm-gate price of each agricultural product (crop or livestock) in a given region” (European Commission,

2016). It should be added that the measure of SO is expressed as the monetary value “per hectare or per head of livestock, by using basic data for a reference period of 5 successive year” (European Commission, 2016). The size of sample of Polish FADN has been approved by European Commission and amounts to 12 100 agricultural holdings (Polish FADN, 2016). In accordance with the current legal state “the FADN field of observation selected according to SO covers commercial holdings that produce at least 90% of the SO in a given region or country” (Goraj and Olewnik (Eds.), 2014, p. 10).

Table 1 presents selected „Standard Products” (i.e. database and reports) of Polish FADN. The system of FADN generates numerous reports that are treated as a basis for decision-making process. Decisions that may be taken in the context of farm management refer the farm as the whole organisation and their individual business lines. These managerial decisions for the farm concern planning. The part of operating decisions provides practical implementation of the elaborated plans (Goraj, 2014).

**Table 1: Standard Products of Polish FADN**

Product	Content	Users*
Computer data base	Individual data from about 12 500 agricultural holdings, ca. 2 500 variables	Researchers** (universities, research institutes), governmental bodies, EU bodies (e.g. European Commission)
Individual Report of Agricultural Holding	Various types of variables	Farm operators, indirectly agricultural advisors
The FADN Farm Return	”Structure and content in line with the Commission Regulation (EC) No 868/2008 of 3 September 2008 on the farm return to be used for determining the incomes of agricultural holdings and analysing the business operation of such holdings with amendments“	EU bodies, governmental bodies, farmers’ representatives (agricultural organisations)
Comparison report of individual farm with the group of the similar farms	Some structured data for economic and financial benchmarking	On request of farmers
Standard Results for groups of holdings participating in the Polish FADN	”Fully comparable structure with the European Commission Standard Results report” – as the publication entitled Standard Results of Polish FADN agricultural holdings”	Researchers (universities, research institutes), governmental bodies, EU bodies (e.g. European Commission), agricultural advisors

*Note: \*views of authors of paper are presented, \*\* persons who operate on individual data are obliged to observe statistical confidentiality (e.g. presenting and publishing results with aggregated and processed data).*

*Source: adapted from Polish FADN data (Polish FADN, 2016).*

The ultimate goal of any accounting systems collecting data on the business activity (incl. farming production) is to improve processes of management. The effectiveness of the accounting system as an information system depends on the use of the data provided. This should corresponds to the set of specific needs of users of the information. Although the FADN as accounting system

plays an important role as an essential tool for creating the CAP in the European Union and national agricultural policies, its usefulness for farm management cannot be ignored. Table 2 enumerates and discusses main disadvantages and direct/indirect benefits for farmers who cooperate with the FADN system (in fact, they „belong” to this system). The FADN system brings several direct and indirect benefits, both at micro (for farmers) and sectoral levels.

**Table 2: Disadvantages, direct/indirect benefits for farmers performing FADN accounting**

Category	Description	Level*
Disadvantages*	The FADN-based accounting <u>is limited to the farm as a whole, and does not refer to specific production activities</u> . An overview of the current state of accounting in the Polish farms shows that most farmers do not keep accounting records. This current situation results from the lack of obligation to collect accounting data within a single accounting system, as well as the lack of a set of fiscal instruments that may force the obligation for keeping accounting record at the farm level*.	Farm level, sectoral level
Advantages: direct benefits	<ul style="list-style-type: none"> <li>▪ Obtaining a higher level of knowledge on economics and management</li> <li>▪ Organisation of documents collected at farmer's home (for the purpose of accounting)</li> <li>▪ Data recorded and collected may have numerous applications (1) 'an ongoing evaluation of results', (2) 'a detailed control of settlements with product recipients and material suppliers', (3) 'comparisons of achieved results with the planned ones'</li> <li>▪ Getting the habit of regular keeping records</li> <li>▪ Higher bargaining power as for an access to credits/loans this results from the higher level of creditworthiness (compared to farmers who do not keep accounting records)</li> </ul>	Farm level, indirectly sectoral level
Advantages: indirect benefits	<ul style="list-style-type: none"> <li>▪ Creating databases (preparing analyses of various farms' condition and evaluation of the impact of changes in agricultural policies)</li> <li>▪ 'Better macroeconomic management': more detailed monitoring of the income situation of farms that is crucial for designing new financial support instrument (e.g. the level of direct payments)</li> </ul>	Sectoral level, macro level

*Note: \*views of authors of paper are presented.*

*Source: own studies based on Polish FADN data and Goraj and Olewnik (Eds.) 2014, p. 53-56.*

Farmers who participate and provide data for the FADN may receive several reports that may be useful for processes of farm financial management. These reports (Table 3) correspond to the category of 'direct benefits' of the FADN system. As presented, the aforesaid product of the FADN system can be useful for assessment of the economic situation of farms, in particular the level of their income, that is determined by stochastic variables (Goraj, 2014; Goraj and Olewnik (Eds.), 2014).

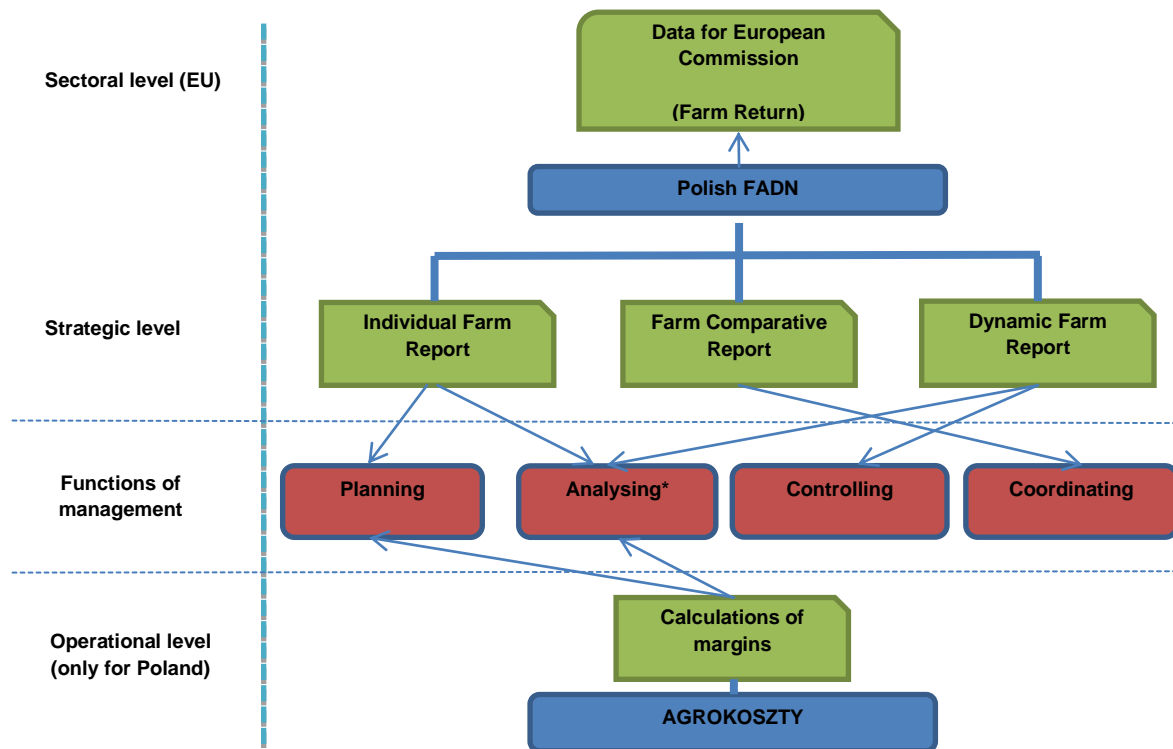
**Table 3: FADN Reports for farmers**

Type of report	Content	Usefulness for a farm financial management
Individual Farm Report	This report describes the economic activity of the agricultural holding. It includes (1) <i>information about the assets at its disposal</i> , (2) <i>expenses incurred during the production process</i> , and (3) <i>the economic results of the entity analysed</i> (Polish FADN, Reports, 2016).	The simplified version may be a base for financial planning and control.
Farm Comparative Report	This report shows the agricultural holding of the farmer on the background of similar households divided into 50% - the average ones, 25% - the most vulnerable ones, and 25% the best ones.	This report may be used as a good tool for benchmarking (control + adjustment). Farmers may select some criteria for comparison.
Dynamic Farm Report	This report may be used for assessing changes in financial and economic situation of the agricultural holding a period of five years.	This is the main tool that supports farmers in decision-making: <ul style="list-style-type: none"> <li>▪ beneficial for long-term analysis of business performance of agricultural holding,</li> <li>▪ a useful tool for planning of development paths of farms;</li> <li>▪ the complex assessment of business risk stemming from fluctuations in the economic situation caused by changes in natural and market conditions.</li> </ul>

Source: adapted from Polish FADN (2016).

Figure 1 presents a linkage between fundamental functions of management (however, analysis is only a process, not a management function), the abovementioned reports (generated by the FADN System) and calculations of costs and margins („Agrokoszty”). This indicates also various levels of decision-making. It should be noted that Individual Farm Report may support financial planning, but inflow of some detailed data on costs/margins may be very useful.





**Figure 1: FADN Report for farmers vs. functions of management**

Source: own studies.

Table 4 presents a simplified assessment of the suitability of the accounting FADN to farm financial management. The greatest restriction of the use of the FADN accounting for financial management purposes is the lack of details on events that could have an impact on results from selected „business lines” (for example, cultivation of rye, breeding pigs). This problem can be eliminated by introducing additional forms that allows the collection of more detailed data. Moreover, the Polish FADN owns the organisation unit that deals with collecting additional information about the value of production, outlays, costs that are necessary for cost and gross margin calculations of selected agricultural activities (so-called „Agrokoszty”).

The results of analyses being conducted indicate a high level of diversification of production, differences in level of costs, margins for different groups of farm households. This may confirm the strong need to collect data not only for the whole farm, but also divided into the categories by agricultural activity. Keeping detailed accounting records seems to much more time consuming, but, on the other hand, provides wider range of financial information for farm operators.

Table 4: Assessment of the usefulness of agricultural accounting within the system Polish FADN for a farm financial management

Limitation	Opportunities
<ul style="list-style-type: none"> <li>▪ The lack of possibilities for farm operation management</li> <li>▪ No detailed information on the events taking place in a field or a livestock building, which limits the ability to determine the causes of changes in income</li> </ul>	<ul style="list-style-type: none"> <li>▪ A wealth of information and structure data on resources, capital, cost, production, etc.</li> <li>▪ A basis for farm management as the whole business organisation</li> </ul>

Source: own studies.

It should be noted that there is a limited number of studies evaluating suitability of FADN as a tool supporting farm financial management. Since some structural similarities between Polish and Hungarian agricultural sectors, we would like to underline some conclusion from Hungarian studies. Keszthelyi i Pesti (2010) noted that financial plans may be evaluated based on data from the FADN system, similarly as data from accounting systems for non-agricultural businesses. There is some evidence that about 55% of farmers (unfortunately, deliberately-chosen small sample) used FADN data for the purposes of financial planning (Zarda, 2009). On the other hand, German economists, Morfeld, Stahlschmidt and Krieter (2012, p. 178) propose that selected organizations may utilize data from external accounting system for the purpose benchmarking. Another source can be the separate dataset (for example, ZDS Erzeugerringdatenbank).

#### 4 Concluding remarks

The analysis confirms the widespread opinion that the FADN as the accounting system may be a good basis for decision-making in the area of financial management. The necessary rationale for using FADN system for supporting financial management is the strong need for providing more detailed data withing the accounting system.

The experience of EU countries shows that basic/simplified accounting, which is used by farmers, is accounting for income taxation purposes. This type of accounting can be modified and used as a tool for farm financial management.

There is the lack of harmonised format of accounting system. Depending on potential needs of users, reasonable modifications may be implemented. It is believed that the development of agricultural accountancy in Poland will also be proceeded in a similar manner.

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