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**Agricultural Farm Income
and competitiveness
of the tax
and insurance systems**



INSTITUTE OF AGRICULTURAL
AND FOOD ECONOMICS
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Agricultural Farm Income and competitiveness of the tax and insurance systems

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COMPETITIVENESS OF THE POLISH FOOD
ECONOMY UNDER THE CONDITIONS OF
GLOBALIZATION AND EUROPEAN INTEGRATION

Warsaw 2014

The work was carried out under the following theme:

Budget grounds for improvement of the competitiveness of the Polish agriculture
in the task: *Social insurance and taxation in agriculture – conditions and proposals of reform*

The aim of this study was to analyse the conditions and principles of functioning of the insurance system and the taxation on agriculture with regard to their impact on increasing efficiency and improving the competitiveness of the agricultural sector in order to make appropriate changes to these systems.

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Preface

To implement their policy, public authorities in all states use the financial resources collected in the course of fiscal policy. The tax and insurance system is the main set of fiscal instruments. The system is used by a state to collect funds necessary for its proper functioning and fulfilling socio-economic functions. A good tax system should stimulate the activity of market players and economic growth and, at the same time, reduce and eliminate phenomena that are socially and economically harmful. However, an insurance system should guarantee social security for the population. In most European states, the burden of responsibility falls on the state.

Business income is the main element influencing the shape of tax and insurance policy. Indeed, it is one of the most important factors shaping the socio-economic standing of economic entities, which essentially translates into the level of economic development of a given state. Earning income is a prerequisite for the survival and development of units. Its amount provides a decision-making framework for entities in terms of their production volumes, current consumption and savings and hence the extent to which their needs are satisfied. Therefore, income is an essential factor for the functioning of not only basic economic units, but also the state.

Competitiveness is an important element of market policy of each state. It is a desirable phenomenon, since it has a major bearing on the economic development of each state. In fact, it is a “driving force” for innovation, creativity as well as technical and technological progress. In the era of globalisation, most states face the phenomenon of tax competition manifested, inter alia, in establishing an appropriate legal and tax environment with the aim of gaining tax and insurance advantage in both domestic and foreign market. Legislation establishing an operational framework for economic entities has a significant impact on market power and business development. Appropriately designed tax and insurance systems not only promote gaining competitive advantage, but also allow for attaining socio-economic objectives in each state.

Research carried out in 2014 was aimed at analysing the conditions and principles of functioning of the insurance and tax system in agriculture in terms of their impact on boosting efficiency and improving the competitiveness of the agricultural sector, in order to introduce appropriate changes in these systems. Specific objectives were: (1) to review the methods of calculating agricultural income in different states, (2) to highlight differences between tax and accounting income, and determine how special arrangements influence the amount of the tax burden, (3) to identify factors influencing the competitiveness of tax and insurance systems.

The objective was achieved by means of literature studies, analysis of primary data collected from interviews based on survey questionnaires and data from Polish and foreign official statistics.

1. Tax and insurance policy of the agricultural sector

Tax and insurance policy is one of the main elements of socio-economic policy, while its main task is to ensure that socio-economic objectives can be reached. Tools to enable their implementation include, inter alia, tax rates, insurance premiums, reliefs, deductions and exemptions. The successful implementation of these policies depends on the form and shape of individual tax and insurance structures. Nevertheless, their relevant definition requires careful analysis of existing solutions, identification of the socio-economic standing of particular social groups or consideration of basic taxation principles. This knowledge allows for establishing systems tailored to conditions existing in a specific state and the economic standing of taxpayers. Legislative authorities face many problems in defining tax and insurance systems. On the one hand, they involve the need to finance the constantly increasing needs of citizens with regard to providing public goods and services by a state, which necessitates the need to increase fiscal efficiency of taxpayers. On the other hand, problems arising out of the need to apply such system solutions, which allow for the economic development of certain sectors, become a challenge. Therefore, tax and insurance policy favouring certain groups of citizens or sectors of the economy is not surprising.

The scope of privileges directed under the tax and insurance system to agriculture stems from the specific economic, social and historical conditions of this sector. Important factors in favour of the functioning of separate legal solutions include, inter alia:

- natural urge for food consumption. Every state is obliged to provide its citizens with basic living conditions, thus agriculture was considered a strategic sector in this area,
- natural limitations of agricultural production, resulting in a lack of competitiveness in relation to other sectors and disparities in agricultural income in relation to non-agricultural income, such as:
 - limited and immobile land factor,
 - natural conditions that cause time delays between expenditure incurred and income generated – long-term return on investment,
 - dependence on weather and soil conditions, being decisive for the efficiency of agricultural production, is stronger than in any other sector,
- execution of functions that go far beyond food production duties.

These conditions determine the nature and type of agricultural production undertaken, while their variability makes it impossible to predict the effects of agricultural production. In this context, agricultural activity involves a much higher degree of uncertainty than activity in other industries and reduces the tendency of the sector to undertake investments, which are a driving force for

economic development. Thus, such conditions necessitate surplus retransfer to agriculture and provide grounds for support in the form of special financial systems favouring this sector. The scope of privileges directed under the tax and insurance system to agriculture is a measure of its competitiveness.

The EU Member States have different tax systems in place, even though their authorities pursue similar public tasks. This tax differentiation results from their sovereign decisions on the implementation of adopted socio-economic objectives. Tax differentiation is widely discussed by economists and politicians. Two different views prevail. In accordance with the first one, the differentiation in tax systems is unfavourable, as it generates additional transaction costs and leads to unfair tax competition¹. The second view considers the tax differentiation favourable, as it leads to the rationalisation of public spending and reflects the advantages of specific EU Member States in attracting production factors². Regardless of these views, the functioning of separate tax systems is a common practice in the EU, which leads to gaining competitive advantages at the international level. The tax system can enable a state to achieve sustainable competitive advantage, which results not only from possessed resources and skills, but also the specific operating conditions of a given sector or state.

Furthermore, tax competition involves choosing a taxable base and a method for its calculation. Most frequently, income, which is the most common taxable base for economic activity from the point of view of tax law, is a determinant of the economic effects of farming. However, it should be noted that methodology for calculating taxable income, which can be a source of competitiveness of economic entities both nationally and internationally, is one of elements influencing the amount of income taxes.

The EU Member States have numerous methods for calculating farm profitability, ranging from simple estimation methods and ending with methods derived from financial accounting. Hence, the selection of a method for calculating taxable income may have a significant impact on shaping competitive advantages in the agricultural sector.

¹ G. Zodrow, P. Mieszkowski, *Pigou, Tiebout, Property Taxation, and the Underprovision of Local Public Goods*. *Journal of Urban Economics*, Vol. 19, pp. 356-370, 1986; J. Wilson *Theories of Tax Competition*, *National Tax Journal*, Vol. 52, pp. 269-304, 1999.

² J. Wilson, D. Wildasin, *Capital Tax Competition: Bane or Boon*, *Journal of Public Economics*, Vol. 88, pp. 1065-1091, 2004; E. Mendoza, L. Tesar, *Why Hasn't Tax Competition Triggered a Race to the Bottom? Some Quantitative Lessons from the EU*, *Journal of Monetary Economics*, Vol. 52, pp. 163-204, 2005; R. Baldwin, P. Krugman, *Agglomeration, Integration and Tax Harmonisation*, *European Economic Review*, Vol. 48, pp. 1-23, 2004.

1.1. Determinants of agricultural tax and insurance system

The tax system of farms should be designed so that, on the one hand, it allows for fulfilling four basic functions, i.e. fiscal, regulatory, incentive and control functions, on the other hand – for taking account of specific conditions of economic and financial processes taking place on farms. The tax policy of the EU Member States is sovereign, nationally-oriented and can be individually modelled depending on the needs and level of development of a given economy³. This means that the tax policy of the EU Member States is not uniform in nature and frequently becomes a source of competitiveness at the international level.

In most analysed European states, income rather than property forms the taxable base for farms. Given the fact that the taxable base applied can be different, three types of agricultural tax can be identified: property tax, revenue tax and income tax⁴.

Property tax is historically the oldest form of agricultural tax. It is based on external features (quantity and quality of land) reflecting the size of farm-owned property. In this case, the amount of tax depends on the area of arable land. Tax levied based on the value of an enterprise's individual property items, excluding those not serving agricultural activity, is an improved form of property tax.

Agricultural revenue tax refers to fruits arising out of land ownership and cultivation. It is levied based on gross revenue, i.e. all fruits, excluding expenses incurred for their achievement. This tax is relatively simple to implement, but it does not refer to the economic standing of taxpayers and must be paid regardless of whether farmers do or do not achieve a surplus from their activity.

In turn, income tax is based on the category of income. The real amount of income can be determined on the basis of accounting records kept in a farm or estimated standards set by a state. Determining income based on accounting records is more accurate and makes the tax burden distributed according to the ability of taxpayers to bear it. Therefore, income taxes are sensitive to income changes and unemployment rates.

Most economists believe that income tax is the most appropriate form of agricultural tax. Therefore, net income, understood as agricultural income, which is revenue minus production-related costs, constitutes the taxable base in most EU Member States. Nevertheless, detailed legislative solutions in individual states influence the diversity of rules for determining the taxable base for

³ L. Goraj, J. Naneman, M. Zagórski, *Determinants and Consequences of Agricultural Taxation in Poland*, Development Initiative Forum, Warsaw 2014.

⁴ M. Pohorille, *Prices and Income in Agriculture*, Polish Agriculture and Forest Science Publishing House, Warsaw 1972.

agricultural income, the amount of which has a significant impact on the amount of the tax burden and the detailed scope of applied reliefs and exemptions. The material scope of income tax is determined by defining income which, as many economists believe, is considered one of the best subjects of taxation⁵.

2. Multi-faceted approach to income in the theory of economics, finance and tax law

There is no single area of human life which would be free of the influence of income. In fact, income influences people's willingness to continue their current lifestyle, raise their standard of living or cease their employment and seek new workplaces. Thus, it constitutes an important determinant of wealth and a driver for meeting the needs of individuals. Disparities in income have a significant impact on the degree of social inequalities existing in society. It is also regarded as one of the most important incentives for work. The level of income in a given state has a significant bearing on domestic consumption, which is an important stimulus for economic development. It is also vital for the state's competitive position in the international arena.

The concepts of income functioning in various scientific disciplines are not identical, despite the existence of a general (the same) rule for determining its level (revenue minus costs). This applies, inter alia, to economics, accounting and law, especially tax law, which differently define individual income items. Generally, economics defines income as the positive difference between economic revenue (actually earned) and all expenses incurred by a given entity. However, tax revenue is a contractual category always determined normatively and reflects tax revenue in surplus of tax costs incurred to achieve it. In accordance with R. Zieliński, such an approach means that tax income should be in no way equated with income in an economic sense, which is of no practical use for tax purposes. As a matter of fact, it may happen that a given taxpayer earns economic income in the absence of tax income⁶. Thus, when forecasting changes in tax systems and comparing them at the international level, it is necessary to recognise differences determining the formation of economic and tax income.

2.1. Income in economic theory

The concept of income appeared in the European literature at the turn of the 16th century. Initially, it was used to determine proceeds received from the exchange of goods. Then, as a result of the intensification of trade relations, the

⁵ A. Gomułowicz, J. Małecki, *Taxes and Tax Law*, 4th edition, Ars Boni et Aequi, Poznań 2000, pp. 59-60.

⁶ R. Zieliński, *Concept of Tax Income*, State Labour Inspectorate 2009/10/48-56, [www. lex.pl](http://www.lex.pl)

emergence of new social classes and a new state organisation and administration, it was transposed to the context of financial law. In the early 19th century, the development of civilisation led to a general concept of tax income. Hence, the concept of income is not only a financial category, but also a category that strictly dominated tax law and the theory of taxes together with tax practice.

Income is one of the basic economic categories which are used at the micro (including the income expansion path, Engel curves, the income effect of a change in the price of a good) and macro (national accounts) level. Thus, income in economics is a positive result of using production factors in the process of farming. These factors include: land, labour, real and money capital. This means that, from the economic point of view, income means all proceeds generated by a farm holder on a timeshare basis, after deducting all costs of their acquisition. Therefore, income is an economic surplus obtained by a given entity as a result of performing certain actions, which allows this entity to satisfy consumption needs and meet investment objectives. Thus, income forms a material basis of existence for each economic and social unit. In the S. Smyczek's⁷ opinion, the importance of income stems from several factors. Firstly, it is the main measurable factor in determining demand and consumption. Secondly, income influences the behaviour of market actors much earlier than other economic factors (e.g. prices). Furthermore, it indirectly impacts on changes in other variables, e.g. prices or demographic phenomena. It also ensures the development and social security of economic units.

In the case of enterprises in the broad sense, i.e. entities authorised by law to run economic activity, we are dealing with the category of profit⁸ as a basic financial category. Although the financial management of modern enterprises aims in particular at pursuing development and adding value, thus leading to increasing the benefits of owners (partners, shareholders), a cluster of goals and priorities should be analysed taking account of a timeframe type⁹. As a result, from the point of view of a micro-enterprise, the objective will involve a desire to achieve a financial surplus, which covers current consumption and creates

⁷ S. Smyczek, *Rationality of Polish Households Income Management*, University of Economics in Katowice Publishing House, Katowice 2005, pp. 9-10.

⁸ Profit is a category used in microeconomic deliberations on the enterprise theory. It should be emphasised that economic profit (extraordinary) is the difference between an enterprise's total revenue (its takings) and the *total economic cost, including an opportunity cost* (e.g. cost of using capital). E. Czarny, *Microeconomics*, Polish Economic Publishing House, pp. 121-122. Economic profit, to a greater extent than its financial reporting equivalent (accounting profit), gives meaning to the functioning of an economic entity.

⁹ P. Pluskota, R. Rumiński, *Elements of Corporate Finance*, [in:] *Elements of Banking and Finance*, collective work edited by S. Flejterski and B. Świecka, CeDeWu Publishing House, Warsaw 2007, p. 343.

business development opportunities¹⁰. The situation is different in companies¹¹ where it is essential to achieve a bonus (in the form of dividends) for those “lending” capital. To sum up, the scale of activity of a given economic entity and, consequently, its legal and organisational form determine its objectives in both long and short run. However, in any case, economic organisation is focused on achieving a certain economic surplus.

Financial phenomena in family farms are relatively complex. The reason for this is the fact that these entities are reflected in the CSO statistics as “households”; on the other hand, farm’s pro-market orientation indicates the entrepreneurial nature of agricultural production, particularly evident in commercial farms within the field of observation of the FADN¹². Due to the undetermined – so far – legal status of a farm (as exemplified by a wide range of legal definitions of a “farm”¹³), these entities are treated differently depending on legislator’s needs (e.g. social security systems, civil law and the agrarian system). Household finance, also called, rather unfairly, personal finance, influences the analysis of economic phenomena in the agricultural entities, which have no legal personality¹⁴.

¹⁰ P. Pluskota, R. Rumiński, *Elements...*, op. cit., pp. 343-344.

¹¹ The agricultural sector includes also farms in the form of legal persons. The following study thoroughly analyses their share in the agricultural sector: W. Dzun, *Structural Changes in the Agricultural Holdings of Legal Persons during the Pre- and Post-Accession Period* (1996-2010). Issues of Agricultural Economics, No. 3, 2014.

¹² This is a relatively debatable and unresolved issue. For example, B. Świecka considers “finance of individual farm holders”, in addition to “finance of natural persons” and “finance of individual entrepreneurs”, a component of a new sub-discipline, i.e. “household finance”; cf. B. Świecka, *Elements of Household Finance*, [in:] *Elements of Finance and Banking*, collective work edited by S. Flejterski and B. Świecka, CeDeWu Publishing House, Warsaw 2007, p. 383. Moreover, as noted by K. Jajuga, a breakdown of finance by individual specific disciplines is relatively smooth, as exemplified by enterprises “performing functions which have been carried out so far by public entities”, K. Jajuga, *Elements of Financial Science. Categories and Financial Instruments*, Polish Economic Publishing House, 2007, p. 16. Jajuga indicates that, *inter alia*, small and medium-sized enterprises (SMEs) are one of the objects of interest of corporate finance.

¹³ It is surprising that EU law (Treaty of Rome and secondary legislation) has no uniform definition for “a farm”; cf. A. Jurcewicz, *Common Agricultural Policy of the European Union*, [in:] *Agricultural Law*, collective work edited by P. Czechowski, LexisNexis Publishing House, Warsaw 2013, p. 72.

¹⁴ As noted by D. Korenik and S. Korenik, also microfinance started to be addressed when considering household finance, paying attention to cash phenomena of people “whose resources do not allow them to meet their needs”; cf. D. Korenik, S. Korenik, *Fundamentals of Finance*, Polish Scientific Publishers PWN, Warsaw 2004, p. 17. The concept of microfinance may apply to farms with low economic power and limited marketability, which are of interest to rural development policy.

D. Korenik and S. Korenik believe that, irrespective of the type of an economic entity, its survival depends on “having income power”. As regards enterprises in general, “income power” means the ability to generate profits, while the “ability to generate income” is a fundamental criterion for the rest of entities. Consequently, the category of income/profit is “central” to finance¹⁵.

While listing the types of household financial decisions, S. Flejterski draws attention to those related to consumption and savings that are most closely related to the management of family income¹⁶. Generally, household financial decisions are taken under conditions of risk and ignorance (as entities have insufficient knowledge). In accordance with the principle of a “new family economy”, the family became an agent of economic decisions as “a multifaceted production unit maximising production functions with market goods, time, skills and knowledge of its individual members as inputs thereof”¹⁷.

In the case of a family farm, decision-making on financial resources is extremely complex¹⁸. Most frequently, the structure and amount of income are analysed, including:

- “current income – i.e. labour and self-employment income, as well as rental income,
- assigned income – donations and inheritance,
- other income – interest, dividends and foreign exchange differences¹⁹”.

Monetary income is a particularly important category in terms of household budgeting. It may be determined based on a cash flow statement²⁰.

¹⁵ D. Korenik, S. Korenik, *Fundamentals of Finance*, op. cit., p. 82.

¹⁶ S. Flejterski, *Methodology of Finance. An Academic Handbook*, Polish Scientific Publishers PWN, Warsaw 2007, p. 93.

¹⁷ S. Flejterski, *Methodology of Finance...*, op. cit, p. 94, [in:] M. Blaug, *Methodology of Economics*, Polish Scientific Publishers PWN, Warsaw 1995, p. 322.

¹⁸ R. Gasson and E. Errington list a variety of sociological (including the need for taking account of family life-cycle phases, intergenerational transfers) or even psychological conditions (including the choice of a “mental” discount rate) in the case of farms; the study by Gasson and Errington can be considered a very comprehensive study on family farms; cf. R. Gasson, E. Errington, *The Family Farm Business*, CAB International, Oxon 1993. The peculiarities of family farms in the Polish economic and agricultural literature are pointed out, *inter alia*, by F. Tomczak, J.St. Zegar, A. Czyżewski, A. Kowalski.

¹⁹ E. Bogacka-Kisiel, *Household as an Economic Entity*, [in:] *Personal Finance. Behaviour – Products – Strategies*, collective work edited by E. Bogacka-Kisiel, Polish Scientific Publishers PWN 2012, p. 21.

²⁰ M. Kisiel mentions that the cash flow statement should be kept on an ongoing basis and it should also include all inflows and outflows; the cash flow statement should be kept “in order”; M. Kisiel, *Money and Household Finance*, [in:] *Personal Finance. Behaviour – Products – Strategies*, collective work edited by E. Bogacka-Kisiel, Polish Scientific Publishers PWN 2012, p. 99.

Income can also be considered at the level of an individual economic decision maker. In this case, the experimental approach, which is applied in empirical research practice by economic/financial psychology, may be useful²¹.

In conclusion, the category of income – as an economic surplus in households (including family farms) is of paramount importance from the point of view of basic economic decisions and financial management. As for farms owned by legal persons, profit is a crucial category from the perspective of financial reporting.

Numerous economists believe that income is the best subject of taxation²². For the first time, it started to be treated as such in 1799 in England, becoming widespread in Europe as late as in the second half of the 19th century. However, along with the need for taxation of income, a number of issues appeared relating to the essence of taxable income.

2.2. Concept of tax income

As a legal category, tax income is one of the most contentious issues in the financial law, including tax law. The abstraction of the concept is a fundamental problem in its precise definition²³, because its final shape is always determined by legislative authorities in the tax law making process. Therefore, tax income is not realised income and was formulated only for the purposes of income tax assessment, which distinguishes it from the concept of income functioning in economic sciences. The reasons for this are a reasonable simplification in determining the taxable base and tax, and implemented socio-economic policy diversifying an approach to income from various revenue sources. It has to be added that the concept of realised income for the purposes of taxation is useless, due to a different catalogue of deductibles and non-deductibles, and an extensive collection of tax exempt revenue.

Disputes as to the scope of the general concept of tax income contributed to the emergence of different theories of income which may be classified into the following groups:

²¹ This lifts the assumption that an economic decision agent acts as *homo oeconomicus*. To a greater extent, anomalies indicating a lack of economic rationality in the actions of a decision maker are explored. Considering most of the existing studies related to agricultural finance, this approach is used relatively rarely; cf. M. Soliwoda, *Behavioural Approach and Economic Experiment in Agricultural Finance*; Issues of Agricultural Economics, No. 1, 2014.

²² A. Gomulowicz, J. Malecki, *Taxes and Tax Law*, 4th edition, Ars Boni et Aequi, Poznań 2000, pp. 59-60.

²³ A. Krzyżanowski, *Science of Revenue Services*, Fiszer i Majewski Publishing House, Poznań 1932, p. 120.

1. theories of income in the strict sense (*sensu stricto*), which include:
 - a) theory of income periodicity represented by A. Wagner,
 - b) consumption fund theory (so-called consumer theory) whose main representative was G. von Schmoller,
 - c) theory of sources represented by B. Fuisting and F. Guth,
 - d) theory of revenue types (so-called production theory) whose main representative was W. Roscher;
2. concepts of income in the broad sense (*sensu largo*), which include:
 - a) theory of pure capital appreciation (so-called theory of net capital appreciation),
 - b) concept of income by Haig-Simons;
3. modern concepts of income:
 - a) concept of income by F. Neumark,
 - b) Haller's theory,
 - c) theory of market income.

The fact that the concept of income referred to the source of its origin was a common feature of concepts in the strict sense. In accordance with the theory of periodicity, as income was considered regularly recurring pure revenue from a secure and stable source of earnings, legally and factually belonging to a given person, including benefits in value and opportunities for using the property of that person. As pointed out by J. Zdzitowiecki²⁴, the essence of income by A. Wagner was determined by the following features: the personal nature of income, regularly recurring proceeds being the source of income, its stable source and legal origin. Income was determined excluding all increments (inheritance, donations) and property losses.

The consumption fund theory defines "income" as all goods, benefits, services that arise annually as a result of work or from the property of certain entities that can use it for own maintenance or intend for increasing their property. Factors that were decisive for the essence of such income included:

1. type of proceeds – only proceeds, which could be used at a given time not diminishing the existing property, accounted for income,
2. method of using income – earned income could be used in the first instance to meet individual's needs, only the remainder could be allocated for investment purposes,
3. stable source of income (work or property),
4. regular method of earning income,
5. legal method of generating it.

²⁴ J. Zdzitowiecki, *Concept of Income in Polish Income Tax*, Gebethner i Wolff Publishing House, Poznań 1939, pp. 12-16.

The theory of sources was the most famous concept of income. Its authors defined “income” as only those proceeds generated by a unit whose source was stable. Any other occasional proceeds (from inheritance, donations, property sale) fell beyond the concept under consideration. The production theory was the modification of the theory of sources. It recognised income as only proceeds originating primarily from production economic activity. This approach made it necessary to accurately determine which economic activity types are recognised as productive and which of their results are considered income. Also Polish economists discussed this notion of income. Attention should be given, *inter alia*, to the views of H. Radziszewski who defined “income” as recurring cash proceeds, which increased the taxpayer's property, derived from economic production factors: nature, labour and capital. Occasional cash proceeds, e.g. from donations, a lottery win, etc., are one-off revenue, but cannot be recognised as income. This concept was developed by R. Rybarski²⁵, who believed that the concept of income must refer to its source and incorporate a stability aspect. This means that one-off revenue does not constitute income and is called profit. In his view, tax income is the so-called pure income, i.e. a surplus achieved in a given period after covering the costs of its generation, maintenance and security.

Also S. Głąbiński²⁶ indicated the requirement of income stability. Moreover, he distinguished between two concepts, i.e. income and revenue. He believes that income is a concept related to owners, hosts, workers who collect it in order to further manage it for their own purposes. However, revenue is associated with a source from which it comes, with production, thus being by nature burdened with production costs.

Concepts in the broad sense shifted away from the sources of income and were based on the assumption that income is nothing but an entity's ability to increase property. Compared to concepts in the strict sense, these theories broadened the concept of income to include occasional proceeds, i.e. donations, inheritance, bequests, lottery wins, compensation, etc. In the theory of pure property growth, any net property (revenue) growth (after deducting relevant costs and suffered property losses) achieved by a taxpayer in a given period was considered income. For the existence of income, it did not matter whether property growth was regular or occasional, or whether it came from economic or per-

²⁵ R. Rybarski, *Value, Capital and Income*, Warsaw, p. 183, as cited [in]: J. Zdzitowiecki, *Concept of Income in Polish Income Tax*, Gebethner i Wolff Publishing House, Poznań 1939, pp. 12-16.

²⁶ S. Głąbiński, *Science of Revenue Services. Supplement. Changes in Polish Tax Legislation Between 1925 and March 1927*, author's publication, Warsaw 1925, p. 289.

sonal activity of a given taxpayer²⁷. This concept has been applied in practice in tax legislation in the second half of the 19th century in some of the free cities of the Reich and Swiss cantons, as well as in the German Income Tax Act of 1921. In the 1920s and 1930s, the theory of pure property was developed by R.M. Haig and H.C. Simons and took the form of the so-called concept of income. It was based on the assumption that income is determined by factors reflecting the economic standing of a taxpayer. These factors include, *inter alia*, consumption understood as the purchase of goods and services or savings collected by a taxpayer. Nevertheless, R.M. Haig and H.C. Simons perceived income in a slightly different way. The former characterised income as the money value of the net accretion of one's economic power in a given time²⁸, while the latter defined it as the sum of expenses on the consumption of goods and services, adjusted for the balance of individual taxpayer's net property achieved at a given time²⁹. The R.M. Haig's concept was applied in North America tax legislation of 1986, while the H.C. Simons' theory was used to determine the taxable base in Canada.

In line with modern concepts, income is a stream of value of goods, services and monetary amounts coming from various sources. It is achieved by producing goods and services, non-returnable transfers (land rent and retirement pension), performing gainful work. It can also come from property or capital and other activities³⁰. Income can also be understood as the enrichment of an economic entity in a given period. The F. Neumark's theory defines "income" as an increase in value resulting from the participation of a person, who achieved it, in the creation of a social product. However, to be recognised as income, the increase in value must contribute to raising the economic capacity of an entity that achieves it. Heller³¹ believes that speaking of income necessitates referring to one's taxpaying capacity, with the extent to which personal needs are met as a measure thereof. His concept of income is very broad. He defines it as any goods, which are intended to satisfy personal needs, including the value of goods and services produced for own use, the value of consumer durables (e.g. residential buildings) or the value of housework (cleaning, cooking, etc.). Another concept of tax income similar to the Heller's theory was presented by R.A.

²⁷ J. Zdzitowiecki, *Concept of Income...*, op. cit., p. 13.

²⁸ M. Haig, *Concept of Income in the Federal Income Tax*, New York 1921, p.7.

²⁹ H.C. Simons, *Personal Income Taxation. The Definition of Income as a Problem of Fiscal Policy*, The University of Chicago Press, Chicago-London 1965, pp. 41-58.

³⁰ A. Komar, *Tax Systems of the EU Member States*, Polish Economic Publishing House, Warsaw 1996, p. 36.

³¹ H. Heller, *Die Steuern*, 3rd edition, Tübingen 1981, p. 42, [in:] H. Litwińczuk, *Corporate Tax Law*, 3rd edition, KiK Konieczny i Kruszewski Publishing House, Warsaw 2001, p. 77.

Musgrave and P.B. Musgrave³², who define “income” as the total increase in one’s overall wealth. In their view, any increase in income – regular and irregular, expected and unexpected, realised (consumed) and unrealised (saved), contributes to achieving total income, to which tax rates are applied. The concept of market income is a modified variant of the theory of pure property growth³³. In line with its assumptions, income may arise only in the economic sphere as a result of own work or capital investment. Therefore, this concept of income does not include proceeds achieved in the form of donations, income from the sale of personal property items, inheritance or scholarships.

The abovementioned definitions of tax income demonstrate that the structure of the subject of taxation in income tax raises numerous problems related mainly to the determination of an optimal income system. In accordance with C. Kosikowski and E. Ruśkowski, the problem lies primarily in answering whether obtained or accumulated (e.g. savings) resources are tax income³⁴ or whether income should be taxed when achieving or spending it? Only having answered these questions, it is possible to establish appropriate tax income structures. From a practical point of view, the theory of market income, which has been reflected in German tax law, offers the greatest advantages³⁵.

Nonetheless, it should be noted that, although the concept of tax income deviates significantly from the economic approach, the tax structure and the issue of economy of the subject of taxation are not completely separated from each other. H. Litwińczuk states that the relationship between the accounting and tax result may differ³⁶ and lists three situations:

1. Tax income is equal to with balance sheet profit, which means that principles for determining profit in balance sheet law are fully recognised by tax law. In accordance with H. Litwińczuk, this situation is a purely theoretical assumption, as no state achieves a perfect correlation between the principles of balance sheet and tax law. It should be noted, however, that actions towards achieving convergence between both laws would be desirable, taking into account purely practical considerations.
2. Balance sheet profit differs from tax income, but forms grounds for its determination. This situation means that principles for determining profit in

³² R.A. Musgrave and P.B. Musgrave, *Public Finance in Theory and Practice*, McGraw-Hill Book Company, New York 1980, pp. 336-347.

³³ K. Tipke, J. Lang, *Steuerrecht*, Koln 1991, p. 202, [in:] H. Litwińczuk, *Corporate Tax...*, op. cit., p. 77.

³⁴ C. Kosikowski, E. Ruśkowski, *Finance and Financial Law*, Warsaw 1994, p. 152.

³⁵ H. Litwińczuk, *Corporate Tax Law*, 3rd edition, KiK Konieczny i Kruszewski Publishing House, Warsaw 2001, p. 78.

³⁶ H. Litwińczuk, *Balance Sheet Law*, KiK, Warsaw 1995, p.163.

balance sheet law are, to a certain extent, recognised by tax law. As I. Olchowicz³⁷ points out, both profit categories differ from one another, but tax income is determined by taking balance sheet profit (gross) as a starting amount, appropriately adjusting it for costs not recognised by tax law (increasing it) or income exempt from taxation (decreasing it). This method allows for keeping tax income and the economic category of the financial result together. The method is used in Germany, France, Italy, Spain, Belgium, Greece and Luxembourg.

3. Tax law is completely different from balance sheet law, while principles for determining profit in balance sheet law are not recognised by tax law, which separately defines principles for determining tax income. Such regulations are included, *inter alia*, in Polish tax law whose procedures for determining tax income are carried out in isolation from balance sheet law. This situation indicates that accounting is not tax-oriented in nature.

3. Farm income

Farm income has some specificity compared with that of other population groups, based on wages under the employment relationship or running own non-agricultural economic activity. This specificity is due to the following factors:

- An individual farm holder plays a double role, i.e. as an owner of the means of production and a worker, which results in far-reaching coupling of a farm with a household. Income is distributed between these two parts on an *ex post* basis, which means that the farm holder receives wage for work, land rent and interest on equity at the end of a reporting period. Therefore, there are two approaches. The former is linked to the complexity of agricultural income³⁸, while the latter questions such a possibility³⁹. In line with the first approach, agricultural income comprises two elements: own labour cost, which is an equivalent to wages and pure income generated by own work, achieved due to the private ownership of land in place and other means of production. Proponents of the second concept question the possibility of having pure income included in agricultural income and stress that it is an artificial structure, possible to calculate only after adopting contractual labour cost. Nevertheless, it should be noted that a similar situation is ob-

³⁷ I. Olchowicz, *Tax Accounting*, Accounting Vademecum, 9th edition, Difin, Warsaw 2011, p. 65.

³⁸ H. Chołaj, *Interest as an Economic Category in the Peasant Economy*, Polish Economic Publishing House, Warsaw 1963, p. 47.

³⁹ E. Gorzelak, *Income of the Agricultural Population in Poland*, People's Publishing Cooperative, Warsaw 1990, pp. 77-78.

served for non-agricultural economic activity carried out by natural persons. This makes agricultural income a very complex problem. Hence, it has been and still is the area of disagreement between economists.

- Agricultural income can be both in cash (sale of goods and services) and in kind (consumption for farm purposes). The calculation of the second part causes many difficulties and, in fact, is based on certain assumptions and estimates. It should be noted, however, that the share of the second part decreases as overall socio-economic development and agricultural development proceed.
- Off-farm income (income under gainful contract employment and social benefits) represents a significant share in the structure of farm income. The research by J. St. Zegar shows that approx. 30% of a farmer's income comes from sources other than work in own farm. These are mainly contract employment income, social insurance and non-agricultural economic activity⁴⁰. This lack of farm profitability is reflected in an increasingly smaller percentage of farms generating basic income to support the family's living. This is due to economic and socio-cultural reasons. In accordance with J. St. Zegar, agricultural income lags behind wages and, in general, non-agricultural income. Some farms are thus forced to undertake off-farm gainful employment or non-agricultural activity based on the farm (e.g. agritourism, agri-food processing, craft and trade)⁴¹. It should be noted that earning off-farm income significantly reduces disparities in agricultural family's income.
- Agricultural income fulfils two functions: production and redistribution. The former consists in the fact that the level of agricultural income has a bearing on the level of agricultural production, while the latter involves an income transfer. Income redistribution in the market economy is more about income movements (transfer) between agricultural and non-agricultural populations, rather than between agricultural population groups. In most EU Member States, the non-agricultural population (taxpayers) supports the income of the agricultural population. This is done using income policy instruments.

Every state has numerous possibilities and instruments to develop agriculture-oriented income policy. One of the most important issues is determining the ratio of agricultural population's income to non-agricultural population's income. Therefore, income policy has a number of different purposes, namely: forming desired income relations, shaping the level of income, stabilising income over time, i.e. mitigating fluctuations in income from year to year and re-

⁴⁰ J. St. Zegar, *Agriculture of the 3rd Republic of Poland*, Mazovia Regional Studies, No. 15/2014, ed. Mazovia Regional Planning Office, Warsaw 2014.

⁴¹ J. St. Zegar, *Agriculture...*, op. cit.

ducing income inequalities between different agricultural population groups. Changes in agricultural income are mainly due to fluctuations in agricultural production, which depends on natural (mainly weather factors) and economic factors. The effects of fluctuations in production on income may be offset by changes in prices and compensation under the production risk insurance. In the case of fluctuations in production caused by economic factors, different instruments under state intervention measures must be used to mitigate income effects. The agricultural tax and insurance system plays a certain role in stabilising agricultural income. Taxation (especially with income tax) can be used to reduce disparities in income within agriculture. However, it is difficult to achieve this objective using the present structure of agricultural tax existing in Poland. In most EU Member States, agriculture is subject to the income tax system and the same can be expected in Poland within several years. Furthermore, real property tax, inheritance and donation tax and social insurance have a certain impact on agricultural income.

To sum up the foregoing considerations, it must be emphasised that income is not only a result, but also a cause of many agricultural phenomena. It is the most synthetic outcome ratio and a measure of the standard of living of the population. As noted by T. Rychlik and M. Kosieradzki, this term can be assigned multiple meanings and each of them can be correct depending on the context⁴².

St. Stańko adds that analysis and comparison findings in various socio-professional groups largely depend on the definition of income⁴³, which will significantly affect the amount of the tax burden. Thus, the specificity of agriculture makes agricultural income a category that causes a number of difficulties in its proper recognition, definition and calculation.

3.1. Farm income – historical approach

One of the first definitions referring to the category of agricultural income was proposed by Gebethner and Wolff in 1874 and cited by Z. Grochowski⁴⁴. These authors have developed a simple definition of income referring to pro-

⁴² T. Rychlik, M. Kosieradzki, *Basic Concepts in Agricultural Economics*, Polish Agriculture and Forest Science Publishing House, Warsaw 1981.

⁴³ St. Stańko, *Level and Diversity of Farm Agricultural Income in 1987 and 1992 with Respect to Income from Agricultural Activity* [in:] *Adjustment Processes in Peasant Agriculture for the Market Economy*, Publishing House of the Warsaw University of Life Sciences, Warsaw 1994.

⁴⁴ Z. Grochowski, *Estimate of Agricultural Population's Income from Agricultural Production, Gainful Employment and Other Sources*, Issues of Agricultural Economics No. 5, Warsaw 1971.

ceeds and expenses. In their view, all values coming to an entity – whether an individual farm or collective, i.e. a state, municipality, etc. – represent inflows, while those coming from this entity – outflows. They define “general income” (gross) as proceeds achieved during a certain marketing period. Pure income (net) is obtained after deducting all expenses incurred to generate general income. The following factors are a source of any generation: nature, resources (capital) and labour. Scientists believe that these three factors are essential to distinguish between three types of income:

1. rent (land rent) as the so-called land income, interest on resources and earnings as remuneration for human labour;
2. entrepreneur’s profit constituting farm holder’s remuneration;
3. free income.

In line with the Gebethner and Wolff’s nomenclature, Rychlik and Kosieradzki⁴⁵ identified three types of income: general income or gross income, also known as raw income; pure income (also referred to as net income) which is gross income minus all production costs (its items are land rent, interest on capital and entrepreneur’s profit) and free income which is difficult to precisely define and calculate.

In the T. Rychlik’s opinion, income is a concept which, in contrast to the concept of production, means an increase in value. This may be the increment of farm-owned property (gained possessions) and a new value that can be consumed. In this sense, income is recognised in monetary terms⁴⁶. R. Manteuffel took this definition as a starting point for the formulation of any concepts and categories relating to the financial result of a farm.

Many economists consider pure production the primary category of income, the source of any agricultural income⁴⁷. In accordance with E. Gorzelak, it is a newly generated value in the process of agricultural production, representing the part of global production that remains after deducting total material costs⁴⁸. Pure production is, therefore, the most general and most original form of income.

All the concepts related to the financial result can be boiled down to three basic outcome categories: net income, profit and agricultural income. Their calculation method is closely dependent on the legal form of a specific economic unit. Agricultural income is a category of income related to an individual farm.

⁴⁵ T. Rychlik, M. Kosieradzki, *Basic... op. cit.*

⁴⁶ T. Rychlik, M. Kosieradzki, *Basic... op. cit.*

⁴⁷ T. Rychlik, M. Kosieradzki, *Basic... op. cit.*; Farkowski C., *Disparities in Peasant Families’ Income*, Publishing House of the Warsaw University of Life Sciences – Agricultural Academy, Warsaw 1991, Stańko St. Level and Diversity of Farm... op.cit.

⁴⁸ E. Gorzelak, *Income of the Agricultural Population in Poland*, People’s Publishing Cooperative, Warsaw 1990.

In CSO Statistical Yearbooks, it is identified with the name of nominal income from agricultural production.

Agricultural income is an economic category related to a farm, where basically there is no hired employment, as its user or users and their families work there. It is regarded as payment for their work and a source of livelihood for agricultural families⁴⁹. These views are confirmed by M. Rojewski, St. Stańko, T. Rychlik, who believe that everything that remains after deducting material costs, a due contribution to social accumulation and payments to institutions and third parties is called agricultural income⁵⁰. It is therefore a surplus that remains at farmer's disposal after paying all expenses. In other words, income is a certain value received by a family as a result of their own work and property rights to their farm⁵¹.

Agricultural income is an excess value of agricultural production over costs of achieving it. Thus, it is obtained after reducing revenue from the sale of goods and services by costs incurred to generate it. By definition, agricultural income is shaped by two groups of factors. The first one includes factors determining revenue generation, primarily sales revenue and other revenue. The second group comprises factors affecting the level of expenses, which include tangible and intangible costs and taxes. Regardless of these factors, the final level of the financial result is influenced by additional corrective elements, which include: the balance of extraordinary profits and losses, and the difference between the opening and closing value of inventory.

The definitions presented indicate that the concept of agricultural income is difficult to interpret due to several reasons. Farmer's income (just like in the case of any other wage-earner) means a certain sum of money spent to meet specific needs. However, the specificity of needs of farms (farmers' workplaces), being far different from the needs of other entities which, in turn, is conditioned by the specificity of agricultural activity, plays the key role in interpreting agricultural income. J. St. Zegar states that a farmer owns both the means of production and workforce. Therefore, income should be considered compensation for the use of land and capital, and farmer's work. Due to the foregoing, agricultural income is much more difficult to measure. Moreover, the specificity of farmer's

⁴⁹ C. Farkowski, *Disparities in Peasant Families' Income*, Publishing House of the Warsaw University of Life Sciences – Agricultural Academy, Warsaw 1991.

⁵⁰ M. Rojewski, St. Stańko, T. Rychlik, *Factors Affecting the Level of Production and Income in Agriculture*, Polish Agriculture and Forest Science Publishing House, Warsaw 1987.

⁵¹ St. Mańko, *Financial Analysis of a Farm*, FAPA-ARMA, programme No. P9105/0/141E, Warsaw, 1995.

income also stems from the fact that some part takes the natural form, i.e. the form of products intended for consumption in a farmer's household⁵².

Farm income, as in the case of many other non-agricultural enterprises, is shaped by two groups of factors. The first one includes factors determining farm revenue, primarily sales revenue, which may be complemented by subsidies. The second group is determined by factors affecting the level of financial expenses, which include tangible and intangible costs, rents, taxes, etc. Consequently, the difference between these two categories is the financial result of a family farm. Nonetheless, it should be noted that the level of agricultural income depends not only on the physical volume of generated agricultural production and the impact of numerous economic instruments of state influence, but also on the nature of a farm, the share of non-agricultural income, the line of production, etc.

3.2. Agricultural income under the CAP – FADN approach⁵³

Pursuing agricultural policy both at the national level and at the level of international structures involves taking decisions which influence the economic and financial standing of farms. As a result, developing a set of subsidy and non-subsidy instruments covers complex analytical processes. Although economic entities need to have interrelated accounting, reporting and financial analysis subsystems at their disposal to manage their finance, statistical data (official statistics) collected by statistical offices and individual data from farms are required on a sectoral basis.

Shaping the Common Agricultural Policy would be almost impossible without accurate and reliable data on production results, economics and financial standing of farms in the Member States. The Farm Accountancy Data Network (FADN)⁵⁴ is responsible for collecting, processing and analysing such structured information.

⁵² J. St. Zegar, *Reasons and Conditions for Agricultural Income Policy*, ed. IAFE, Warsaw 2001, pp. 14-15.

⁵³ Some data on agriculture (on a sectoral basis) are collected by Eurostat (with its registered office in Luxembourg), which uses national sources as a basis. The main difference between Eurostat and FADN data is the fact that the former covers farm groups (including semi-subsistence farms). Such statistical data on EU agriculture illustrate changes in the average farm size, including a decrease in the number of small-sized entities and an increase in the number of large-scale units. Statistical data may also indicate a change in land management patterns (change in crop structure) and livestock management; B. Hill, *Understanding the Common Agricultural Policy*, Earthscan, Oxon 2012, p. 29.

⁵⁴ L. Goraj and E. Olewnik state that the "FADN was created in stages and its scope was extended accordingly as the EU was subject to consecutive enlargements. Pursuant to the Regulation (EEC) No. 79/65/EEC of the Council of 15 June 1965 setting up a network for the collection of accountancy data on the incomes and business operation of farms in the European Economic Community, six founding States of the Community established the FADN. In

In addition to a very important objective, i.e. impact assessment of draft policy amendments, the FADN system allows for determining and comparing farm income across the Member States. It is also essential to focus the FADN system on the analysis of production activity and the economic and financial results of farms.

Having analysed the diagram illustrating the family farm income account, it can be concluded that farm income can be calculated by juxtaposition of different revenue variables (crop production, livestock production, other production) and cost elements (such as total specific costs, total farming overheads) (Figure 1). To go to the “gross farm income” category, total external factors should be deducted (i.e. wages paid, rents paid and interest paid), taking account of an adjustment for the balance on current subsidies and taxes on investments.

The income situation is best described by the following FADN outcome categories: gross farm income, farm net value added and family farm income. The financial result of farms with unpaid own labour is mostly determined by family farm income. The value added is, however, a category that is important when comparing farms of different level of employment of family members and hired workers. This category can also be used to compare the performance of farms whose share of leased property and degree of indebtedness are different. The value added reflects an increase in the value of goods produced in a given farm. There are two categories of the value added: gross and net. The former is a surplus characterising the effects of involvement of three production factors (land, labour and capital) regardless of who owns them. The latter reflects the paid cost of production factors (land, capital, total labour input and management). It is therefore a useful measure of income achieved by all owners of production factors involved in the farm’s activity. This category is one of few measures which can be used to analyse the economic results of farms with a different ownership structure of production factors.

In the FADN agricultural accounting system, *family farm income*⁵⁵, which reflects an economic surplus from farm operating activity, is a basic outcome

1973, the FADN included the United Kingdom, Ireland and Denmark, while since 1981 – Greece. Spain and Portugal joined the FADN in 1986, Finland in 1986 as well, while Sweden and Austria in 1995. On 1 May 2004, more states joined the FADN: Cyprus, Estonia, Lithuania, Latvia, Poland, Slovakia, Slovenia, Czech Republic, Hungary and Malta. Romania and Bulgaria have been FADN members since 2007, while Croatia – since 2013. Currently, the Farm Accountancy Data Network (FADN) functions within the area of 28 EU Member States”; L. Goraj, E. Olewnik, *FADN and Polish FADN (Farm Accountancy Data Network and the system for the collection and use of farm accountancy data)*, IAFE-NRI, Warsaw 2013, p. 4.

⁵⁵ L. Goraj, *Legitimacy and Methods of Measurement of Income in Individual Farms in Poland*, Organisation, Economics and Social Issues, Agricultural Insurance, Materials and Studies, ASIF, Warsaw 2009, p. 37.

unit informing of the income situation of farms. This surplus is the paid cost of own production factors involved in farm operating activity, i.e. labour, land and capital. This surplus refers to all own production factors, rather than solely to own labour. As a matter of fact, the income statement does not include: the labour cost of farmers and their families, the cost of equity made to a farm in the form of land and other assets. Thus, family farm income must allow for covering farmers' labour cost, ensuring the repayment of loan installments and providing a surplus in respect of equity invested in a farm and risk related to running this farm. This income is therefore compensation for both involving own production factors (in the case of farms with legal personality, only land and capital) in farm operating activity and for risk taken by a farm holder in an accounting year.

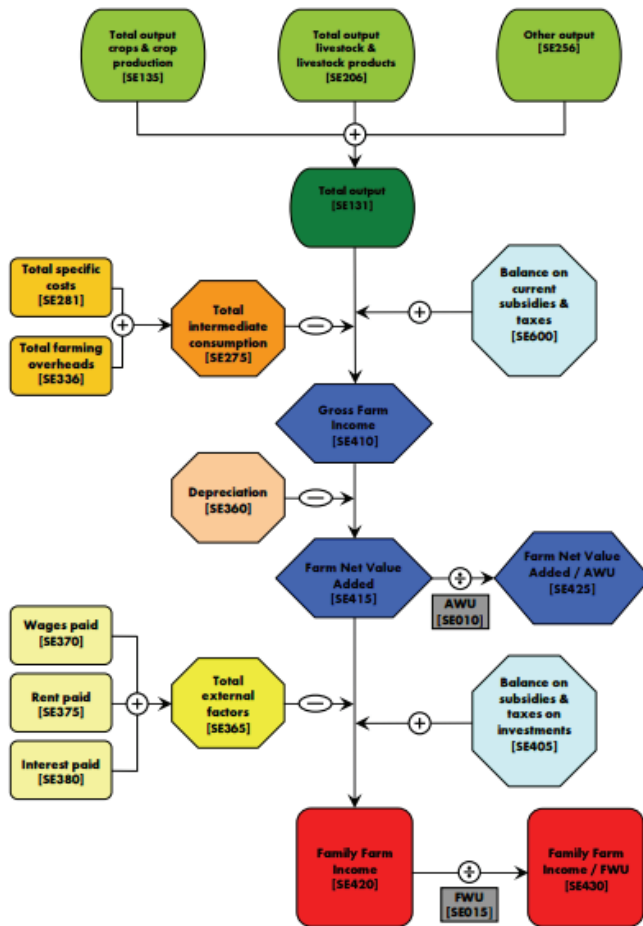
As Dutch agro-economists, H.C.J. Vrolijk and K.J. Poppe, rightly point out, farm holders' income is of interest to policy makers and also raises curiosity among the rest of society⁵⁶, journalists, and finally – among persons engaged in agricultural production. They both stress that more attention is paid to structural transformations and trends in the level of income⁵⁷. Such interest in income suggests that it is not only a determinant of the purchasing power of a particular social group, but it can also be an important element shaping competitive advantages in agriculture. The level of farm holders' income is subject to strong fluctuations due to the lability of prices and yields (resulting from weather factors or livestock disease epidemics and, being the primary cause, fluctuations in prices)⁵⁸.

⁵⁶ This applies to states whose agricultural sector, together with other links of the food economy, held a significant share in the GDP (e.g. Denmark, the Netherlands).

⁵⁷ A low level of income achieved by a farm in comparison to other entities may indicate the need for long-term adaptation measures in the field of allocation of labour resources to other sectors of the economy (currently, mostly to the service sector). Hence, a change in emphasis in U.S. and Canadian agricultural policy can be observed since the early 90s: in lieu of orientation towards equity, cf. S. Jette-Nantel, *Implications of Off-Farm Income for Farm Income Stabilisation Policies, Theses and Dissertations – Agricultural Economics*. Paper 15. http://uknowledge.uky.edu/agecon_etds/15, 2013.

⁵⁸ H.C.J. Vrolijk, K.J. Poppe, *Income Volatility and Income Crises in the European Union*, [in:] *Income Stabilisation in European Agriculture. Design and Economic Impact of Risk Management Tools*, collective work edited by M.P.M. Meuwissen, M.A.P.M. van Asseldonk, R.B.M. Huirne, Wageningen Academic Publishers, Wageningen 2008, p. 33.

Figure 1. Family farm income account



Source: Z. Floriańczyk, S. Mańko, D. Osuch, R. Plonka, *Standard Results 2012 achieved by farms participating in the Polish FADN, Part I. Standard Results, IAFE-NRI, Warsaw 2013, p. 36.*

It should be noted that also activities not typically related to agricultural production (referred to in the Anglo-Saxon literature as “off-farm income”⁵⁹), e.g. agritourism, off-farm employment/self-employment, income earned on financial assets and real property), are a source of farm income. Based on research findings shown in Table 1, it can be concluded that there is a multitude of

⁵⁹ Based on literature studies, S. Jette-Nantel concluded that the net effect of the impact of off-farm work on farm production and the welfare of family members is not uniform. The diversification of the sources of income and “liquidity” benefits improved the financial standing of farms. However, dual employment policy pursued in farms (or at least generating income from non-agricultural sources) involves certain “constraints” that may limit expected returns; S. Jette-Nantel, *Implications...*, op. cit. Research on the recognition of the role of off-farm income is carried out, *inter alia*, by A.K. Mishra, B. K. Goodwin or T. Henessy.

research on the variability of farm income, which indicates the impact of various factors on fluctuations in income. Table 1 summarises the key findings of research on the variability of farmers' income.

Table 1. Modern research on the variability of agricultural income

Economists	Key research findings
Harmignie et al. (2005)*	Annual variation in the levels of yields and prices is a stochastic process or a cycle, rather than a linear trend.
Phimister et al. (2004), Herngrenes et al. (2001), Mishra and Goodwin (1997)	The link between the levels of yields, prices and agricultural income is based on a number of complex dependencies (such as those related to the structure of farm expenses, other revenue, including that of extraordinary nature).
Poppe and Meijl (2006)	Disparities in agricultural income lead to income distribution with wide dispersion in each state.
Allanson and Hubbard (1999)	Fluctuations in agricultural income and disparities in efficiency should be regarded as “ordinary” variation.
Mangen and Burrell (2003)	The impact of crises (including those resulting from disaster events) on farm welfare is not uniform; there are farms which “benefited” and suffered loss as a result of disaster events.

Explanation*: Bibliographic data on the studies referred are included in references.

Source: Own elaboration based on: H.C.J. Vrolijk, K.J. Poppe, *Income Volatility and Income Crises in the European Union*, [in:] *Income Stabilisation in European Agriculture. Design and Economic Impact of Risk Management Tools*, collective work edited by M.P.M. Meuwissen, M.A.P.M. van Asseldonk, R.B.M. Huirne, Wageningen Academic Publishers, Wageningen 2008, pp. 34-35.

Research conducted by D. Niezgoda shows that skills and competencies in the use of factors influencing the supply of and the demand for specific agricultural products, which are produced and sold by farms in specific markets, are the most general cause of disparities in income between different farm groups. He indicates that disparities in farm income are mostly caused by the factor of human labour. The higher its marginal profitability, the more advantageous it is for increasing the farm value added⁶⁰.

⁶⁰ D. Niezgoda, *Income Differentiation in Farms and Reasons for Such Differentiation*, Issues of Agricultural Economics 1 (318) 2009, IAFE-NRI, Warsaw 2009, p. 36.

Table 2. Disparities in farm income by different FADN classification groups in 2008-2013

Item	Average family farm income in 2008-2013	X-fold higher than the lowest income in a study group
<u>Classification by UAA</u>		
Very small (1<ha<=5)	70 600	2.7
Small (5<ha<=10)	26 390	1.0
Medium small (10<ha<=20)	37 305	1.4
Medium large (20<ha<=30)	63 012	2.4
Large (30<ha<=50)	96 888	3.7
Very large (50<ha>=300)	194 837	7.4
<u>Classification by farm economic size</u>		
(2 000<= EUR <8 000) Very small	15 706	1.0
(8 000<=EUR<25 000) Small	38 643	2.5
(25 000<=EUR<50 000) Medium small	83 664	5.3
(50 000<=EUR<100 000) Medium large	152 963	9.7
(100 000<=EUR<500 000) Large	283 416	18.0
(EUR>= 500 000) Very large	705 047	44.9
<u>Classification by production line</u>		
Field crops	77 405	1.4
Mixed crops	54 517	1.0
Permanent crops	57 712	1.1
Dairy cows	88 885	1.6
Herbivores	54 279	1.0
Granivores	106 433	2.0
<u>Classification by farm location</u>		
Pomorze and Mazury	95 623	1.4
Wielkopolska and Śląsk	95 553	1.4
Mazowsze and Podlasie	69 235	1.0
Małopolska and Podgórze	66 091	1.0

Source: Own elaboration based on FADN data from 2008-2013.

The level of farm income is also affected by a number of other factors, including: farm size in hectares, farm size in the number of people working and living there, the level of education attained by a person managing a given unit, market proximity, region-specific soil and climatic conditions, farm location. Research conducted on the variability of agricultural income in the group of FADN individual farms reveals great disparities in income achieved by Polish farms. Research findings indicate that, depending on their grouping category, differences between the highest and the lowest average income are significant (Table 2). The smallest disparities in income exist between farms representing

different production lines and different regions, while the largest ones – in the case of farms belonging to different economic size classes and different area groups. The highest income reported for farms with different economic power is even 45-fold higher than the lowest one and over 7-fold higher when it comes to farms of different sizes in hectares of UAA. Regional conditions and production lines have the least impact on disparities in farm income.

These findings indicate the need for looking for solutions that would boost structural changes in rural areas and make agricultural production more efficient, thereby leading to a fair distribution of resources. An appropriately designed tax system, which is currently not adapted to the income situation of Polish farms, is one of the ways of eliminating such large disparities in income and thus shaping the income situation. It should be noted, however, that taxation is not the only, nor the best solution for bridging the income gap. The findings of research conducted by M. Podstawka and P. Gołasa⁶¹ confirm this thesis. They believe that the widespread criticism of the current system of agricultural financial instruments, which relates to the fact that the instruments at issue cannot be used to bridge the income gap between farmers, has no justification. As a matter of fact, the findings of their research indicate that replacing current agricultural tax with general income tax and increasing ASIF (the Agricultural Social Insurance Fund) contributions results in increasing the Gini coefficient. This means that the introduction of these reforms will not bridge the income gap between farms, but quite the contrary – will make it wider. The findings of this research indicate the need for putting factors, which have a bearing on the volatility of agricultural income, under constant monitoring and analysis.

At the EU level, the analysis of farm income is considered one of the priority tasks of some form of “economic monitoring” of the food economy⁶². It is worth noting that the evolution of the Common Agricultural Policy entailed a shift from support targeted solely on market intervention⁶³ in favour of providing “support” for agricultural income. After reducing guaranteed prices, direct payments were implemented (first, as the so-called “coupled” payments, i.e. hectare-based or livestock-based, and since 2003 – as “decoupled” payments, i.e. not linked to production). Decoupled direct payments, including “cross-

⁶¹ M. Podstawka, P. Gołasa, *Social Insurance and Taxation of Agricultural Activity, Current State and Prospects for Changes*, Agricultural Insurance, Materials and Studies 40/2011, ASIF, Warsaw 2011.

⁶² Cf. European Commission, Directorate-General for Agriculture and Rural Development, *Developments in the Income Situation of the EU Agricultural Sector*, Brussels, December 2010; European Commission Directorate-General for Agriculture and Rural Development, *CAP Towards 2020 Impact Assessment*, Brussels, 2011.

⁶³ Ensuring stable prices of agricultural products above global prices made farmers isolated from signals coming from international agricultural markets; cf. European Commission, Directorate-General for Agriculture and Rural Development, *Developments...*, op.cit., p. 6.

compliance” requirements, have come to be not only a safety net basis for European farms, but also a foundation for a system providing public goods by means of sustainable agriculture⁶⁴.

The Common Agricultural Policy aims at using the agricultural sector to achieve objectives faced by individual national governments. In addition to the wide impact of agriculture on the social environment⁶⁵, including making attempts to solve the following problems: (1) ensuring the supply of food at an appropriate level, (2) achieving economic growth, (3) participating in international trade, (4) rural development, (5) environmental protection, (6) achieving good international relations and political harmony⁶⁶, one problem remains unresolved, i.e. the so-called problem of income⁶⁷.

The so-called problem of structural adjustments is another issue explaining the need for exploring the levels of farm income and stabilising them within the safety net. A diversified structure of farms (reflected in such categories as economic size, production type, efficiency) can be described, while an environmental impact can be put under continuous monitoring. From the point of view of the effectiveness of agricultural policy, following the assumption that the type of information in a well-designed statistical system should correspond to problems faced by public policy. On the other hand, structured statistical data resources contribute to success in achieving agricultural policy objectives⁶⁸.

Agricultural income can be considered from two points of view, as shown in Table 3. Having analysed various definitional approaches, it can be concluded that agricultural policy makers need information on income from agriculture and income from other sources.

⁶⁴ Rural development instruments (Pillar II of the CAP) should not be overlooked. They can be used to complement structural changes by increasing market orientation. They are also a component of the agricultural safety net, *ibid.*

⁶⁵ B. Hill puts the role of the agricultural sector more bluntly: “solving general problems faced by society”; B. Hill, *Understanding...*, *op. cit.* s. 29.

⁶⁶ Each of these issues is discussed in detail by B. Hill, *ibid.*, p. 9.

⁶⁷ The “problem of income” covers: (1) problems of income fluctuations in dynamic terms, (2) the problem of low income and profitability resulting in poverty of families in small-sized farms, (3) poor comparability of results from agriculture and other sectors of the economy, *ibid.*, pp. 33.

⁶⁸ Cf. G. Guastella, D. Moro, P. Sckokai, M. Veneziani, *CAP Effects on Agricultural Investment Demand in Europe*, Italian Association of Agricultural and Applied Economics, Congress Papers 2013 Second Congress, June 6-7, 2013, Parma, Italy; G. Guastella, M. Veneziani, P. Sckokai, D. Moro, *Simulation Results on the Impact of Changes in the Main EU Policy Tools on Farm Investment Behaviour*, Factor Markets Working Paper 56.

Table 3. Agricultural income approaches

Assumption	Income approach	Approach's utility	Application in practice
Agriculture as an agricultural good producer	Income – as a kind of compensation for production activity – is available to the owners of production factors necessary to produce agricultural goods and render services.	Measured at an aggregated (for national accounts) and microeconomic level	Incomes from agricultural production for individual states and the EU as a whole are monitored using three ratios derived from aggregated Economic Accounts for Agriculture (EAA); FADN (Farm Accountancy Data Network) providing data on commercial farms.
Agriculture as a set of institutional units	Considering income as the sum of income from agricultural production and the so-called private income; in institutional terms, farm income is a farm holder's income plus his spouse's income.	Difficulties in measuring non-agricultural income.	The approach under the Income of the Agricultural Household (IAHS) – Eurostat (used in the early 1990s).

Source: Own elaboration based on: B. Hill, *Understanding the Common Agricultural Policy*, Earthscan, Oxon 2012, p. 111.

It follows from the foregoing considerations that, regardless of the availability of relevant and reliable income information, agricultural policy reforms should be pursued. However, this means using an imperfect picture of the agricultural income situation (both at the sectoral and micro level). Table 4 presents disparities in the values of four measures related to the category of agricultural income, i.e. farm net value added and family farm income, and their derivatives for the EU-25. Table 4 presents only 2005 and 2012 values. It shows that the accession of the EU-10, including Poland, has contributed to a significant increase in family farm income (e.g. Czech Republic – up by over 181%, Hungary – by 223%; as regards Slovakia – down by 25%, due to the dominant role of entities with legal personality). When analysing disparities in family farm income per full-time family worker, a larger increase in this category than in family farm income is indicative of a scale-up in entities' production. Taking account of the descriptive statistics presented, some EU-10 farms could generate income (FNI) exceeding the EU-25 median.

Table 4. Disparities in agricultural income in the EU-25

Item	2005				2012				2012/2005			
	1	2	3	4	1	2	3	4	1	2	3	4
Belgium	70350	47758	37179	30557	91868	64250	43123	38725	1.3	1.3	1.1	1.2
Cyprus	10650	6832	7370	6157	13361	9573	9241	9592	1.2	1.4	1.2	1.5
Czech Republic	78193	17940	9893	9533	13004	50501	19791	19035	1.6	2.8	2.0	2.0
Denmark	83157	15586	51611	17137	16761	62308	97888	75410	2.0	4.0	1.9	4.4
Germany	58670	27944	27800	19604	86387	45381	40504	31985	1.4	1.6	1.4	1.6
Greece	16545	14076	12198	12186	14077	11500	12202	12160	0.8	0.8	1.0	1.0
Spain	26626	20526	18132	19140	28030	21075	20033	19906	1.0	1.0	1.1	1.0
Estonia	22391	15026	8109	7732	39264	25903	19519	16568	1.7	1.7	2.4	2.1
France	53759	29518	26668	20056	77253	47403	38041	33116	1.4	1.6	1.4	1.6
Hungary	17014	5818	9340	6555	31438	18821	19903	21592	1.8	3.2	2.1	3.2
Ireland	22583	18241	19861	17119	28903	22532	23681	19867	1.2	1.2	1.1	1.1
Italy	25817	20900	20378	20243	28653	22469	22699	23435	1.1	1.0	1.1	1.1
Lithuania	7242	7207	3938	4396	18195	17131	10267	11321	2.5	2.3	2.6	2.5
Luxembourg	50866	37405	31467	26944	60088	37284	33711	25692	1.1	1.0	1.0	0.9
Latvia	12899	10624	4793	5229	19488	13161	9670	8262	1.5	1.2	2.0	1.5
Malta	14840	12569	9928	8898	10289	8560	7390	6940	0.6	0.6	0.7	0.7
Netherlands	95793	39917	39004	27639	15070	65913	54634	45801	1.5	1.6	1.4	1.6
Austria	28984	23441	18779	16152	31937	27779	22623	21111	1.1	1.1	1.2	1.3
Poland	7199	5830	4058	3729	12736	10681	7375	6711	1.7	1.8	1.8	1.8
Portugal	10291	8354	6162	6153	15077	12839	9506	10041	1.4	1.5	1.5	1.6
Finland	28339	19901	19275	15752	35285	21966	27178	21692	1.2	1.1	1.4	1.3
Sweden	31626	11838	22194	9943	53537	16492	37206	14711	1.6	1.3	1.6	1.4
Slovakia	11221	-	5413	7653	14120	-9175	10285	13768	1.2	0.7	1.9	1.8
Slovenia	5288	4989	2827	2771	5790	5417	3975	3866	1.0	1.0	1.41	1.4
UK	67824	32672	31276	25197	87960	51632	39420	39470	1.3	1.5	1.2	1.5
On average	38366	17708	17906	13859	55167	27255	25594	22031				
1 st quartile	14840	8354	7370	6555	18195	12839	10267	11321				
Median	26626	15586	18132	12186	31937	21966	20033	19867				
3 rd quartile	58670	23441	26668	19604	86387	45381	37206	25692				

Explanations: 1. FNVA (farm net value added) – compensation for involving production factors in farm operating activity, regardless of their ownership status (foreign or own); the parameter adequate for comparing farms with a different ownership structure of production factors; it is calculated as “depreciation” – “gross farm income” (SE415); 2. FNI (farm net income) – family farm income; compensation for both involving own production factors (in the case of farms with legal personality, only land and capital) in farm operating activity and for risk taken by a farm holder in an accounting year. This income is calculated by deducting the balance of subsidies and taxes on investment and the cost of external factors from farm net value added. 3. FNVA/AWU (farm net value added/average working unit), farm net value added per full-time worker (working unit); 4. FNI/FWU (farm net income/family working unit) – family farm income per full-time family worker (family working unit) calculated only for farms with own labour inputs (SE015>0); Z. Floriańczyk, S. Mańko, D. Osuch, R. Płonka, *Standard Results 2012 achieved by farms participating in the Polish FADN*, Part I. Standard Results, IAFE-NRI, Warsaw 2013, pp. 29-30.

Source: Own elaboration based on the European Commission Farm Accountancy Data Network.

3.3. Information capacity of income – prospective and retrospective application in financial management

Income, as one of economic surpluses and also an “equivalent” to profit for family farms, is an important category forming a basis for the calculation of financial ratios. The scope of application of the category of income and its derivatives is wide. It includes both prospective (financial planning, including the income statement) and retrospective applications (ratio analysis from a historical perspective).

The accounting system is oriented towards achieving numerous tasks. Given its key areas, there are three groups of accounting tasks⁶⁹: documentation (*reporting*), planning and control.

Together with control tasks, planning tasks are especially important (including in particular annual budgets and cost plans for cost centres). Control tasks are aimed at correcting deviations from the desired and the actual state. An effective planning process⁷⁰, including the one for the result (income/profit) of an agricultural sector entity, should be characterised⁷¹ by comprehensiveness/completeness, accuracy, continuity (possibility to continue it), transparency and financial efficiency.

In prospective terms, drawing up pro-forma financial statements, including income statements, plays an important role. If a farm has a recording and financial reporting system in place (preferably in a computerised form), it is possible to generate mid-term planning statements. As already mentioned, the planning process, including the one for the result achieved, is complicated

⁶⁹ R. Doluschitz, C. Morath, J. Pape, *Agrarmanagement*, UTB, Stuttgart (Hohenheim) 2011, pp. 226-227.

⁷⁰ The German literature (particularly by German economists) puts emphasis on the importance of planning from the perspective of controlling as a “philosophy” of the management of an economic entity); cf. H-J. Probst, *Controlling: Richtig planen, analysieren und steuern*, Redline Verlag, München 2014; M. Sure, *Moderne Controlling-Instrumente: Bewährte Konzepte für das operative und strategische Controlling*, Verlag Franz Vahlen GmbH, München 2009; P. Horvath, *Das Controllingkonzept. Der Weg zu einem wirkungsvollen Controllingsystem*, DTV Deutscher Taschenbuch, München 2009. Additionally, it is possible to link certain deviations from planning errors, e.g. improper estimation of development of the economic entity’s environment, insufficient processing of information; cf. G. Eilenberger, D. Ernst, M. Toebe, *Betriebliche Finanzwirtschaft. Einführung in Investition und Finanzierung, Finanzpolitik und Finanzmanagement von Unternehmen*, Oldenbourg Wissenschaftsverlag GmbH, München 2013, p. 377.

⁷¹ Ibid., p. 43.

and its effectiveness depends on multiple determinants (including external determinants)⁷².

Earning capacity/profitability demonstrates an ability to generate a positive financial result. In accordance with K.D. Olson, the following measures/ratios provide the most useful information: (1) family farm income⁷³, income adjusted on an accrual basis, return on assets (ROA), return on equity (ROE), the operating profit margin ratio and earnings before interest, tax, depreciation. Table 5 summarises these measures and ratios, paying attention, *inter alia*, to definitional approaches together with spreadsheet formulae.

Table 5. Measurement of farm earning capacity/profitability

Measure/ratio	Definitional approach, calculation method	Notes
Family farm income from operating activity [NFlop]	Equivalent to the so-called entrepreneurial profit (taking into account costs of unpaid labour, management, including own labour and capital of a farm holder). Additionally, a change in the difference in the value of inventory is taken into account (as an “adjustment on an accrual basis”). NFlop = gross revenue – total operating expenses – financial expenses	The higher the value, the higher the basis of profitability ratios (ROA, ROE).
Farm’s return on assets [ROA]	The average rate of return on all investments. In the case of market valuation, ROA corresponds to the opportunity costs of running agricultural activity. In the case of valuation according to costs of acquisition – ROA shows the current return on 1 monetary unit invested in farm assets. $ROA = [NFlop + \text{interest paid} - \text{withdrawal of money for unpaid labour and management}] / \text{average balance of assets}$	The higher the value, the more monetary units are generated on property.
Operating profit margin ratio (OPM)	The ratio reflecting farm operational efficiency; $OPM = [NFlop + \text{interest paid} - \text{withdrawal of money for unpaid labour and management}] / \text{gross revenue}$	The higher the value, the greater the profitability of running activity.
Earnings before interest, tax, depreciation and amortisation (EBIDTA)	$EBIDTA = NFlop + \text{interest expenses} + \text{depreciation}$; “raw” result prior to decisions on financial policy development and tax management.	The higher the value, the greater the base, including the “part” of the result reserved for decisions on financial and tax policies.

Source: Adaptation of considerations of K.D. Olson, *Economics of Farm Management in a Global Setting*, John Wiley & Sons, Inc., Hoboken 2011, pp. 194-197.

It follows from the foregoing considerations that income (e.g. farm income) is a basis for a system of measures and ratios illustrating the profitability of an entity. The more complex calculation of income on a reported basis, which

⁷² M.R. Langemeier, *Financial Ratios Used in Financial Management*, Farm Management Guide MF-270, Financial Management 3 — Revised November 2011, <http://www.ksre.ksu.edu/bookstore/pubs/mf270.pdf> (date of access: 17 December 2014).

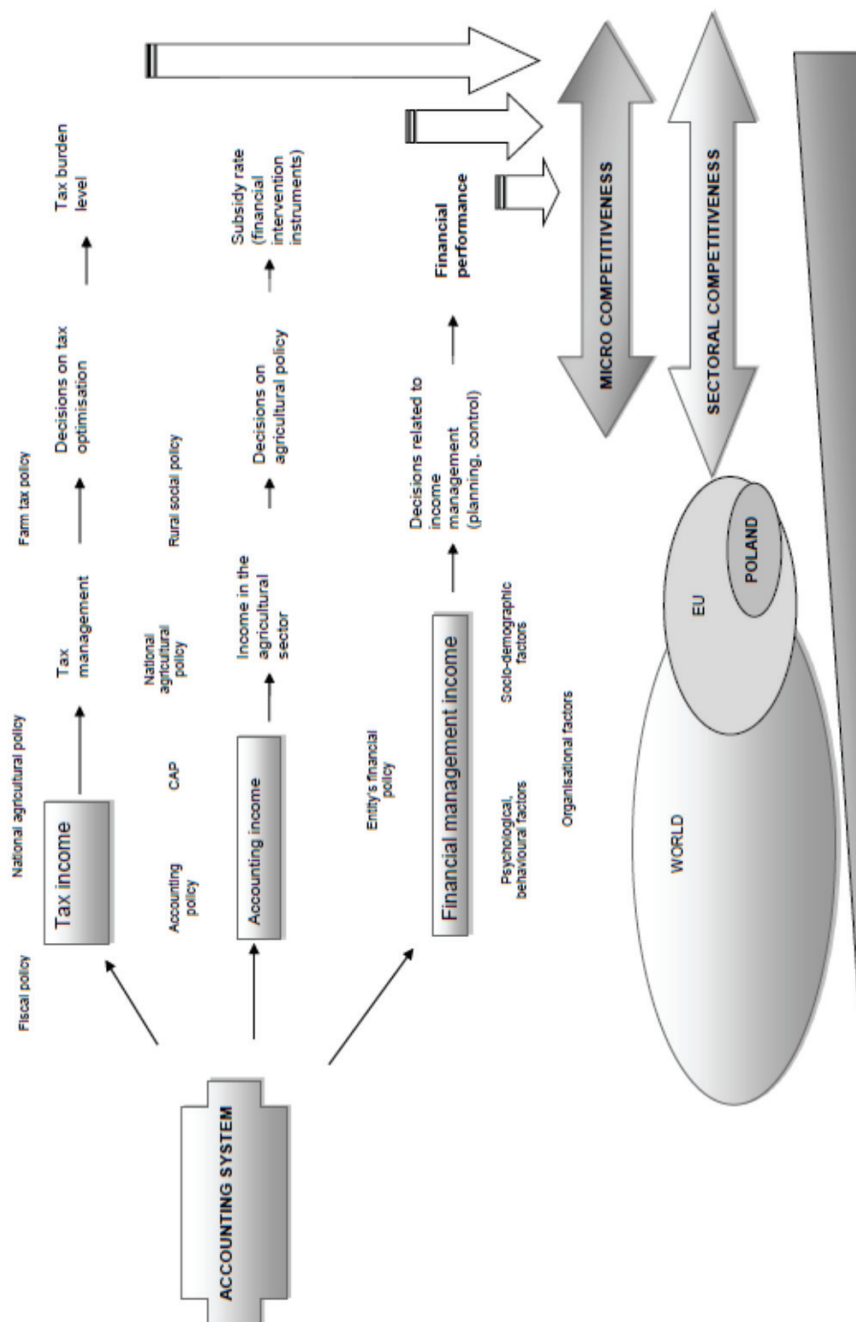
⁷³ Translations – similarly as in the case of the Polish FADN.

means using a cluster of multiple revenue and cost measures, the higher the credibility and usefulness of information for a manager. Using the category of income for planning purposes heavily depends on having a computer application in place and establishing the IT infrastructure for the recording and financial reporting system.

The level and structure of income – as an economic surplus, whose maximisation, following the neoclassical approach, is the aim of farm activity, are determined by a number of exo- and endogenous factors (Figure 2). A range of external determinants is a function of megatrends in the global economy (e.g. liberalisation of agri-food trade, somehow forced by the WTO). It is not without significance that the stabilisation of income by means of complex instruments is one of the objectives of social policy in rural areas. Family farm income is an important category of information for agricultural and social policy makers. Accounting data collection systems for farms (both FADN supporting the implementation of a cluster of CAP objectives and solutions adopted in Canada and the U.S.) formed – as a result of a kind of evolution, but also the adaptation of recording and reporting methodology adopted for agricultural enterprises – complex algorithms for determining economic surpluses.

As for the category of tax income, tax rules formulated in the era of classical economics by Adam Smith or principles (from the late 19th century) on tax administration formulated by Adolf Wagner are still in force. The determination of tax income, which is a basis for determining income tax payable, should be simple enough not to make farm holders consider it a barrier to calculating this income on their own.

Figure 2. Agricultural Farm Income – synthetic approach



Source: Own elaboration.

At the sectoral level, in addition to the level of innovation and the socio-demographic situation in rural areas, the so-called agrarian structure is the main factor influencing the level and structure of income. The ability to adapt and transfer innovation is particularly important for the development of the agricultural sector in such states as the Netherlands and Denmark. Innovation is also an incentive to achieve competitive advantages in various strategic areas of a farm. Following solutions developed through strategic management, it should be noted that it is also possible to consider strategic potential related to the sector. This allows for drawing conclusions on the competitiveness of tax solutions compared to other sectors of the economy.

In addition to macro- and mesoeconomic external factors, it is critical to stress the importance of determinants that relate to the level of an individual farm, i.e. all factors related to farm management (such as management style, agricultural production organisation). They mostly result from the socio-demographic characteristics of a manager (i.e. in particular age, sex, education) and his psychological “profile” (including his willingness to risk, succumbing to cognitive heuristics)⁷⁴.

The considerations above indicate that the structure and level of farm income fluctuate over time, which is an inherent feature of agricultural production. In order to make relatively effective income predictions, it is necessary to recognise a complex cluster of exo- and endogenous factors.

From the point of view of the main line of considerations, the competitiveness of agricultural sector taxation depends on selecting the subject of taxation and establishing criteria for entities subject to taxation (e.g. farms whose production value exceeds a certain threshold). In addition to the foregoing, detailed tax system regulations (e.g. investment incentives, depreciation regulations) are another such element. Given that the category of tax income is complex, as shown by the considerations above, tax systems allowing for preferences for the agricultural sector offer solutions giving a green light for income estimates which are, in fact, closer to the category of production value.

It should be noted that an increase in agricultural income (in the broad sense) is not the only factor indicating agricultural development processes (including sustainable processes). Measuring income and the share of income from non-agricultural activity is an important process in identifying the direction and intensity of structural changes in the agricultural sector. Existing empirical research, both national and foreign, pays little attention to the group of determinants at the level of a farm holder.

⁷⁴ This field of research is little explored by agricultural economists and financiers.

In the synthetic approach, measurement and identification of the direction and intensity of the impact of farm income determinants is methodologically extremely complex. The subtlety of these links is also due to the need for taking into account the imperative of sustainability in the development of the agricultural sector. This greatly hinders decision-making processes in the field of agricultural policy (both at the EU level – the Common Agricultural Policy, and at the level of national policies) or shaping tax policy in relation to farms.

In conclusion, the improvement in the competitiveness of the Polish agricultural sector will entail a range of qualitative transformations, including the popularisation of computerised systems of agricultural accounting. Coupled with support from agricultural advisors, any such tools could facilitate the determination of income for tax purposes (including planned agricultural income tax) and for the purposes of financial resource management.

4. Farm income in selected non-EU countries (U.S. and Canada) and EU Member States (Germany)

4.1. Farm income in the U.S.

In the U.S. literature on agricultural economics and finance, income is a fundamental outcome category. This is mainly due to the relatively higher significance of financial analysis techniques than in European states (with few exceptions), requiring information and data generated by accounting and financial reporting. The name of one of basic financial statement elements, i.e. the “income statement”, draws attention to income as the main outcome category.

In the U.S., federal income taxes⁷⁵ cover all types of economic activity, including agriculture. R.D. Kay et al. distinguished three types of the income fiscal burden imposed on farms⁷⁶:

- ordinary income tax,
- self-employment tax,
- capital gain tax.

U.S. tax law defines a “farm holder” as a person engaged in agricultural activity with the intention of making profit. However, there are special restrictions on farm operator’s eligibility to take advantage of special preferential benefits under the rules of law. The U.S. federal tax authority, i.e. the Internal Revenue Service (IRS), defines “a farm” as a company running economic activity and generating income classified to Schedule F (Form 1040), profit or loss from agricultural activity. In line with IRS regulations, the agricultural activity

⁷⁵ It should be noted that federal states may also have the fiscal burden within the remit of territorial units in place (in the case of the U.S. – state taxes).

⁷⁶ R. Kay, W. Edwards, P. Duffy, *Farm Management*, McGraw-Hill, New York 2012, p. 292.

refers to the cultivation of land and the harvesting of agricultural and horticultural goods (as an owner or a lessee).

Table 6 shows methods for calculating the tax burden. The so-called “ordinary” farm income to which other outcome categories are added (excluding separately taxed capital gains) is a starting point for calculating income tax payable. Generally, the algorithm of “reaching” the amount of “ordinary” income tax payable is similar to solutions in place in most tax systems.

Table 6. Income taxes in the U.S. – overview

Tax type	“Ordinary” income tax	Self-employment tax	Capital gain tax
Method for reaching the tax amount payable	“ordinary” farm income - farm expenses and depreciation = net farm profit + other taxable income - personal deductions and tax exemptions - 50% of the amount of self-employment tax payable = taxable income × tax rate [%] = amount of “ordinary” income tax payable	net farm profit × tax rate (for self-employment tax) [%] = amount of self-employment tax payable	Capital gains (realised income from capital gains) - primary tax base = taxable income from capital gains × tax rate (for capital gain tax) [%] = amount of capital gain tax payable

Source: Own elaboration based on R. Kay, W. Edwards, P. Duffy, *Farm Management*, McGraw-Hill, New York 2012, p. 292.

A certain specific solution is used in U.S. tax law, since the legislator addresses income derived from running agricultural activity as a hobby⁷⁷, which was treated separately. Any hobby income should be reported on the first page of Form 1040 of the personal tax return in Section “Other income”, rather than in line with Schedule F (Form 1040). Tax-deductible expenses can be recog-

⁷⁷ In accordance with IRS regulations, agricultural activity is carried out for profit if profit is achieved in at least three of the last five fiscal years, including the current year (for horse rearing and breeding, it is presumed that these are two of seven years. If the requirement of “years in which profit is achieved” is not met, this does not automatically imply that economic activity does not satisfy the criterion. Instead, other criteria should be taken into account, such as the extent to which a certain activity is of business character (profit-oriented), time and effort devoted to this activity, taxpayer’s dependence. Penn State Extension, *Understanding Your Federal Farm Income Taxes*, <http://extension.psu.edu/business/ag-alternatives/farm-management/understanding-your-federal-farm-income-taxes> (date of access: 24 November 2014).

nised only in Schedule A (Form 1040), with the deductions listed. Furthermore, the IRS determines the order and method of calculating hobby-related deductions and limits amounts eligible for deduction. Finally, loss as a result of running hobby activity cannot be recognised in tax income not related to it.

Table 7 presents selected aspects of the tax recognition of agricultural income. It should be borne in mind that the U.S. adopted, following the British tradition, schedular system⁷⁸. This has its good (such as the possibility to manage a specific category of income for tax purposes) and bad points due to the complex and “multi-facted” nature of tax reporting.

Table 7. Farm income – tax recognition in the U.S.

Issue	Solution adopted
Recognition in the tax statement	Ordinary farm income is declared under Schedule F (Form 1040). Part I applies to farms using the cash method of accounting; Part III for farms using accrual accounting.
Scope of the categories of income	Farm income comes from the sale of agricultural goods from cultivation/breeding, the sale of agricultural goods purchased for resale, income derived from orders and services related to farms, cooperatives, barter income (at fair value), refunds and returns.
Rent	Received rents are treated separately as the so-called rent and lease income. Farms receiving rent in a natural form recognise income in Schedule F (Form 1040).
Government payments	Most agricultural programme payments are taxable and must be recognised as income under Schedule F (Form 1040). Costs related to agricultural practice or a subsidised project usually are treated as tax-deductible expenses.
Agricultural loans	When using production (or its part) as loan collateral, income can be treated as a loan in the year in which it was obtained. In this case, the amount declared becomes a basis for the valuation of agricultural goods. The sale of goods exceeding this base generates additional income, while the sale below it entails loss. The use of crop production as feed allows for recognising the base as tax-deductible expense.
Revenue from the sale of farm assets	Not recognised in Schedule F (Form 1040). Loss/profit from the sale of these assets is recognised in Form 4797.

Source: Own elaboration based on various legal assets (IRS regulations).

⁷⁸ In the schedular system (compared to the global system in place in most European states), any type of income is taxed separately. The fact that the form of taxation and tax rates can be flexibly tailored to a given source of income is a distinct advantage of this system, cf. *Public Finance and Financial Law*, collective work edited by C. Kosikowski, E. Ruśkowski, Wolters Kluwer, Warsaw 2008, p. 548.

From the point of view of tax management at the level of a farm, maximising the result after taxation in the long run plays an important role. In the short run, attention should be paid to minimising the tax burden arising out of the year in which taxable income was achieved. Effective tax management involves the estimation (determination) of notional taxable income following any decision which may – not only in the current year, but also in the long run – influence the amount of the actual income tax burden⁷⁹. Indeed, this means that income management should be assigned an important role from the point of view of tax optimisation.

P.J. Barry and P.N. Ellinger stress that any information system for managing farm finance should not only be oriented towards the information needs of stakeholders (managers, owners, investors, lenders), but it should also provide data required to fulfill tax obligations⁸⁰. In accordance with the recommendations of the Farm Financial Standards Council (FFSC), the information system for managing farm finance should be oriented retrospectively, on an ongoing basis, and prospectively. Until 1994, providing agricultural sector entities with uniform rules for reporting financial information was a major concern⁸¹.

From the point of view of managing farm finance, the income statement⁸² plays a very important role (as it fulfils, *inter alia*, information, motivation and control functions). Usually, the income statement consists of four parts⁸³:

- farm revenue,
- farm expenses,
- non-farm adjustments,
- income and social security taxes.

⁷⁹ U.S. researchers believe that tax management, which is actually minimising the tax burden (by using legal means), is unfairly identified with looking for “tax holes”. The legislator may intend to encourage investment and production in certain areas or increase the level of investment in general economic terms – as a means to improve economic conditions (in line with the neo-Keynesian approach); cf. R. Kay, W. Edwards, P. Duffy, *Farm Management*, op. cit., p. 292.

⁸⁰ These considerations are addressed to U.S. farms, amongst which large-scale farms and ranches are enterprises characterised by a separation between ownership and management functions. Cf. P.J. Barry, P.N. Ellinger, *Financial Management in Agriculture*, Prentice Hall, Upper Saddle River 2012, pp. 4-5.

⁸¹ Barry and Ellinger state that, pursuant to the Agricultural Credit Act of 1987, the National Commission on Agricultural Finance reviewed the overall financial situation of the sector in question. The need for more standardised reporting and financial analysis in agriculture was one of conclusions stressed under the work of this committee. In parallel, another committee (Farm Financial Standards Task Force, FFSTF) developed guidelines on financial reporting for farms. In 1994, the FFSTF became a permanent council (FFSC). Cf. *ibid.*, pp. 12-13.

⁸² This term is typical of American English. British English uses the terms “profit and loss account” or “operating statement”. The income statement corresponds only to the operating segment of the profit and loss account.

⁸³ P.J. Barry, P.N. Ellinger, *Financial Management...*, op. cit., p.19.

Table 8 shows an example of income statement for a hypothetical U.S. farm. Having analysed the table, it can be concluded that, following the accounting principle of matching costs – accrual adjustments, including prepayments, play a significant role. Adjustments take account of the difference between opening and closing liabilities to reflect accrual costs. Interest paid (or accrued on funds borrowed) represents a significant item of farm expenses. Attention should be paid to depreciation. Used thoughtfully, depreciation write-offs can be a tool for managing taxes in the short run as a tax-deductible expense. The fact that the U.S. tax system allows for depreciation applying the Modified Accelerated Cost Recovery System (MACRS) method, in addition to the straight-line method, is a certain peculiarity⁸⁴.

In summary, the adoption of schedular solutions in the U.S. tax system entails the need for identifying and calculating various categories of income. Although agricultural activity is, in principle, treated as a typical entrepreneurial form of farming, hobbyists-farmers may receive some tax relief. In terms of financial management, income is an outcome category whose reliable calculation requires a thorough accounting system (recording along with financial reporting). The foregoing is possible with respect to farms which are relatively strongly related to the financial infrastructure and – through a multi-channel network – to financial markets as well. Qualitative changes, especially those linked to management methods, are a challenge faced by the Polish agricultural sector.

Table 8. Income statement for a farm (for 12 months ending 31 December 2010)

Item	Amount (USD)
Farm revenues	
Crops and feed:	
„Cash” revenue	457 175
Inventory adjustments	13 570
Livestock and poultry:	
„Cash” revenue	131 030
Inventory adjustments	- 17 750*
Cash on the sale of other livestock products	0
Changes in value as a result of augmentation of breeding stock	0
Gains/losses related to culling of breeding stock	0
Government payments and other farm income	26 480
Changes in receivables	3 690
Gross revenue	614 195
MINUS	
Livestock market purchase	0
Costs of purchased feed/grain and livestock	102 660
Value of farm production	511 535

⁸⁴ It should be noted that applying depreciation methods in economic terms allows a farmer to more accurately determine a deduction from net income. This enables a more precise definition of profitability.

Table 8 cont.

Farm expenses	
Farm operating expenses	347 814
Cash operating expenses	0
Non-cash expense adjustments	0
Change in liabilities	+ 8 960
Change in prepayments	- 1 920
Change in unused inventory	0
Change in investments in growing crops	0
Change in other objects	0
Depreciation	33 300
Total farm operating expenses	374 074
Loan interest expenses	0
Amount of interest paid in cash	29 961
Change in accrued interests	-681
Total interest expenses	29 280
Total farm expenses	403 354
Net operating income	108 181
Gains/losses on the sale of capital assets	0
Net farm income before taxation	108 181
Non-farm adjustments	29 280
Wages	900
Income on interest and dividends	0
Other non-agricultural income	0
Total non-agricultural income	30 180
Income before taxation and other procedures	138 361
Income taxes and social security premiums	
Amount of tax paid in cash	16 490
Change in accrued amounts of income tax and social security premiums payable	2 000
Change in current portion of deferred taxes	-389
Amount of income and social security premiums taxes	18 101
Income before extraordinary items	120 260
Extraordinary items (before taxation)	0
Net income	120 260

Source: P.J. Barry P.N. Ellinger, *Financial Management in Agriculture*, Prentice Hall, Upper Saddle River 2012, p. 24.

4.2. Farm income in Canada

In Canada – as a federal state – income taxes are central in nature, while there are also local taxes and charges at the provincial level⁸⁵. General tax rules do not differ from solutions adopted in most Anglo-Saxon states, though the autonomy of provincial legislation was rather strongly exposed. This mainly concerns the specifics of French-speaking regions⁸⁶, compared to other provinces. The Canada Revenue Agency (CRA)⁸⁷ is a tax administration body responsible for tax collection.

⁸⁵ This matter is regulated under the Constitution Act, 1867.

⁸⁶ This is due to historical events (e.g. Newfoundland joined the Canadian Confederation as late as 1949). The Province of Quebec does not formally recognise the Constitution of Canada proclaimed in 1981, although it applies many of its provisions.

⁸⁷ Previously, the Department of National Revenue was a tax administration body. Cf. Canada Revenue Agency, <http://www.cra-arc.gc.ca/menu-eng.html> (date of access: 25 October 2014).

Although agriculture in Canada is treated as typical business activity, agricultural production is governed by special tax regulations. This refers primarily to income earned as a sole proprietor of a farming business (without legal personality, carried out individually on one's own account) or an agricultural partnership (partner)⁸⁸.

Agricultural income includes income generated from the following activities: racehorse breeding, poultry production, milk production (rearing and breeding of dairy cows), fur-bearing animal breeding and farming, running tree and shrub nurseries, fruit-growing, beekeeping, hydroponic cultivation, Christmas tree production, running wild reserves, running chicken hatcheries. In certain circumstances, income can also be generated from: fish culture, horticultural production, running greenhouses, maple syrup production.

As can be seen from the above, the category of agricultural income falls beyond the typical areas of agricultural production. Nevertheless, agricultural income does not include income earned from engaging in agricultural activity as an employee or from hunting fur-bearing animals⁸⁹.

Economic activity commences whenever some significant activity is undertaken that is a regular part of the income-earning process⁹⁰. Table 9 compares two acceptable approaches (cash and accrual method) used to determine tax income.

It should be noted that a farm holder cannot decide to shift from the cash method to the accrual method. Accurate recording of gross income forming total income before deducting the costs of goods sold and other operating expenses plays an important role. A recording system should be sufficiently detailed to provide dates of economic events, amounts and sources of income generated (regardless of its form – received cash, real property or services). Source documents confirming income should include sales invoices, cash register tapes, receipts and sales slips for agricultural produce or other recording forms⁹¹.

⁸⁸ Cf. Canada Revenue Agency, *Farming Income 2013*, <http://www.cra-arc.gc.ca/E/pub/tg/t4003/t4003-e.html> (date of access: 25 November 2014). Furthermore, participation in the AgriStability or AgriInvest programmes involves the need to comply with regulations issued by provinces (separately for Quebec – La Financière agricole du Québec, for Alberta, Ontario, Saskatchewan, Prince Edward Island, use Guide RC4060, Farming Income and the AgriStability and AgriInvest Programmes, in other parts of Canada – Guide RC4408, Farming Income and the AgriStability and AgriInvest Programmes Harmonised Guide).

⁸⁹ Cf. Canada Revenue Agency, *Farming Income 2013*, op. cit.

⁹⁰ IT364 ARCHIVED – Commencement of Business Operations, <http://www.cra-arc.gc.ca/E/pub/tp/it364/it364-e.html> (date of access: 25 November 2014).

⁹¹ Cf. Canada Revenue Agency, *Farming Income 2013*, op. cit.

Table 9. Farm income – tax recognition in Canada

Item	Cash method	Accrual method
Essence	Records of revenue forming monetary income in a fiscal year (in the year in which it was achieved) and deduction of tax-deductible expenses	Records of revenue in a fiscal year (at the time it is generated, regardless of whether it is received), deduction of tax-deductible expenses (in a fiscal year)
Specific solutions – cheques*	Recognising cheques after maturity as debt collateral, the need for being recognised as tax income for the period in which the cheque is payable	Prepayments are governed under separate regulations.
Inventory	With some exceptions, inventory is not included in the calculation of tax income.	Detailed records of inventory (with division into livestock, crops, feed and fertilisers) and determination of the final state (at the end of a financial period) play an important role. Acceptable inventory valuation methods: <ul style="list-style-type: none"> • valuation at fair value; • valuation at cost or fair value, whichever is lower (allowing for valuation of a group of related assets); • valuation of livestock items based on unit prices – in accordance with Form T2034, Election to Establish Inventory Unit Prices for Animals.

Explanation: In Anglo-Saxon states (including Canada) and France, cheques are still widely and willingly used for non-cash settlements.

Source: Own elaboration based on the Canada Revenue Agency, *Farming Income 2013* <http://www.cra-arc.gc.ca/E/pub/tg/t4003/t4003-e.html> (date of access: 30 November 2014), Canada Revenue Agency, *Farming or Fishing – Use of Cash Method*, <http://www.cra-arc.gc.ca/E/pub/tp/t433r/t433r-e.html> (date of access: 30 November 2014).

Compared to solutions adopted in the EU Member States or in the U.S., Canada has developed a separate farm income reporting system. Various measures of income are used to support the implementation of separate agricultural policy objectives. In this context, aggregate farm income estimates are an important issue⁹². Tax returns, the Farm Financial Survey⁹³ and the Census of

⁹² Agriculture and Agri-Food Canada and Statistics Canada, *Understanding Measurements of Farm Income*, Farm Income and Adaptation Policy Directorate Agriculture and Agri-Food Canada Publication No. 2060/B, Agriculture Division Statistics Canada Catalogue No. 21-525-XIE, 2000.

⁹³ The Farm Financial Survey (FFS) is conducted every two years. Its findings are conceptually similar to tax data estimates. The FFS collects gross proceeds broken into government payments, sales of: grains, horticultural products, cattle, pigs, poultry, dairy products (mainly raw milk) and others. In parallel, the FFS includes cost categories (excluding depreciation), including interest expenses, wages, property insurance and government programme contributions. These findings are presented every two years in December. The published estimates cover balance sheet items, including details on revenue and cost categories (at the provincial level) by farm types and sale ranges (findings are presented as averaged values). The FFS is funded by the Agriculture and Agri-Food Canada; cf. Agriculture and Agri-Food Canada and Statistics Canada, *Understanding Measurement...*, op. cit.

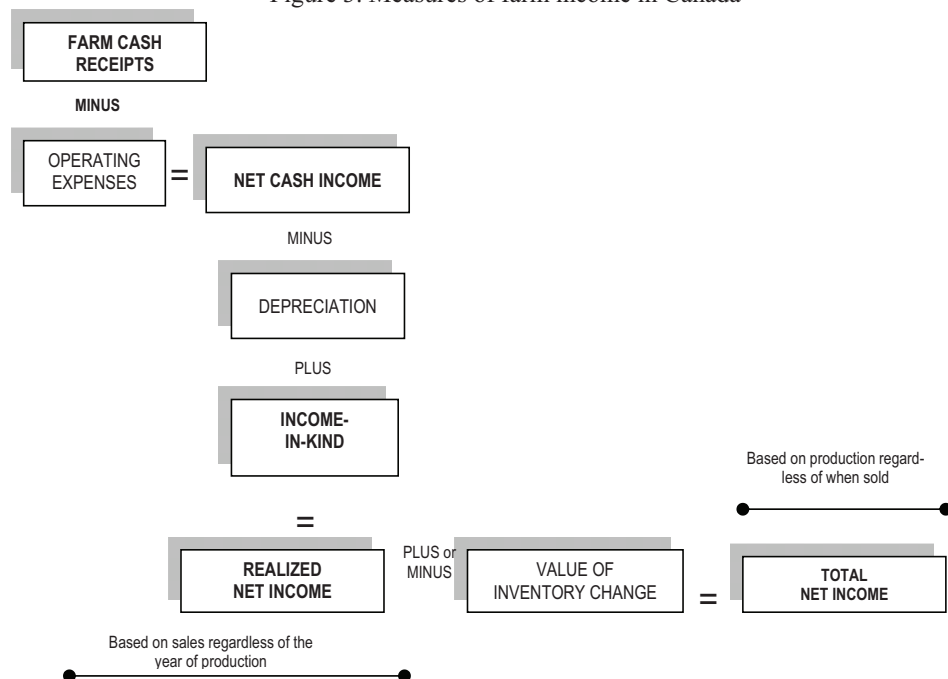
Agriculture⁹⁴ held every five years are (to some extent) a source of information on farm income. These data usually present frequency distributions and averaged variables describing farm income by farm type and the volume of sales turnover.

Data from tax returns use a sample of both registered and unregistered taxpayers representing farms. This allows for estimating a wide range of financial variables, including different revenue and cost categories, and increasing the value of assets and their sale. This sample provides also information on non-agricultural income. A data series is published annually with preliminary findings in November of the year following a reference period. Aggregated measures of net farm income used for statistical reporting purposes in Canada include (Figure 3):

- **net cash (monetary) income** – resulting from cash flows generated from the production of agricultural goods; net cash income represents the amount of money available for debt repayment, enabling an owner to invest,
- **realised net income** – includes both monetary and non-monetary flows (e.g. depreciation, income-in-kind); realised net income represents net farm income from transactions in a given year regardless of the year the agricultural goods were produced,
- **total net income** – measures also changes in the value of inventory; total net income determines the economic value of production, represents the return to owner's equity, unpaid labour, management and risk.

⁹⁴ As a result of linking two censuses (Census of Agriculture and Census of Population), income variables from the Census of Population can be tabulated for farm holders and their families: one such variable, i.e. “net farm self-employment income”, includes farm-to-farm sales. It should be noted that the usefulness of this linkage derives from the ability to cross-classify income with other farm or farm holder variables. Cf. Agriculture and Agri-Food Canada and Statistics Canada, *Understanding Measurements...*, op. cit.

Figure 3. Measures of farm income in Canada



Source: Agriculture and Agri-Food Canada and Statistics Canada, *Understanding Measurements of Farm Income, Farm Income and Adaptation Policy Directorate Agriculture and Agri-Food Canada Publication No. 2060/B, Agriculture Division Statistics Canada Catalogue No. 21-525-XIE, 2000, p. 6.*

The category of farm income and its derivatives are widely used in farm management. It should be noted that there is a complex set of economic and financial data, which should be integrated and synthesised to increase and maintain farm profitability. Effective farm management means not only focusing on maximising income, but also taking into account the objectives and intentions of a the farm holder and his family. Canadian farm management experts postulate the need for a new type of segmentation of farmers – managers. This is mainly due to differences and needs within different types of farms⁹⁵:

- **young/novice farmers** – highly-educated, interested in new business models,
- **“new” farmers** (including the so-called urban agriculture) – hobby agricultural production integrated into the urban space and its surroundings⁹⁶.

⁹⁵ S. Jetté-Nantel, D. Freshwater, M. Beaulieu, A. Katchova, *Farm Income Variability and Off-Farm Diversification in Canadian Agriculture*, Agriculture and Rural Working Paper Series, Catalogue No. 21-601-M - No. 93.

⁹⁶ P. Ladner, *The Urban Food Revolution: Changing the Way We Feed Cities*, New Society Publishers, Gabriola Island, 2011, pp. 8-9.

Additionally, the breakdown of farms by gross annual income plays an important role:

- below CAD⁹⁷ 100 000 per year – over half of Canadian farm holders referred to as running “life-style farms” focus their attention on generating non-agricultural income. Due to time constraints, they pay little attention to raising their business management skills (excluding some professional farmers running their family farms in line with management principles);
- from CAD 100 000 to CAD 500 000 per year – average group whose size decreases; farm holders in this range are forced to expansive growth or reduction, taking into account their personal objectives and interests;
- above CAD 500 000 – commercial farms focused on business growth.

It follows from the above that the category of income fulfils an information function, e.g. useful for paying agencies. The level of income (as shown, defined and measured differently) determines the degree of achieving farm cash objectives.

Income, as an important economic category being the aim of farm activity (in the neoclassical approach), also plays an important role in agricultural policy in Canada. The principle is to use income as a measure in the AgriStability programme (agricultural income stabilisation), which is a kind of a support package under a socio-economic safety net for farmers⁹⁸. AgriStability aims at protecting the economic welfare of farmers in the event of a significant decline in surplus. The AgriStability programme includes two important categories⁹⁹:

- **programme surplus** – acceptable amount of income (including eligible costs with an adjustment regarding changes in receivables, liabilities and inventory – based on a harmonised form provided by AgriStability,
- **reference surplus** – calculated based on a three-year average from five years, excluding the lowest and the highest surplus.

It should also be noted that AgriStability payments are triggered only when surplus production in a given year falls below 70% of the reference surplus. Thus, the mechanism of this support instrument differs fundamentally from direct payments applicable in the EU Member States. AgriStability payments are a kind of a hedging instrument for farmers' income. AgriStability Interim Payments are part of the programme. In general, their aim is to ensure that calcula-

⁹⁷ Canadian dollar.

⁹⁸ In the provinces of Manitoba, New Brunswick, Nova Scotia, Newfoundland, Labrador, Yukon, the AgriStability programme is managed by the Federal Government Administration. In turn, in British Columbia, Saskatchewan, Alberta, Ontario, Quebec, Prince Edward Island, the responsibility for AgriStability rests with the authorities of the provinces. Agriculture and Agri-Food Canada, AgriStability, <http://www.agr.gc.ca/eng/?id=1291990433266> (date of access: 6 December 2014).

⁹⁹ Agriculture and Agri-Food Canada, AgriStability..., op. cit.

tions reflect reductions in the estimated margin decline in a programme year (e.g. 2015) relative to the estimated margin in your reference period. To reduce the risk of overpayment, interim payments are generally issued at 50% of the estimated final benefit, but this may be subject to change¹⁰⁰.

In summary, the Canadian experience indicates that agricultural income is an important category of information which is highly useful not only at the level of individual farms (as a measure to achieve results), but also from the point of view of national agricultural policy development. This is crucial given the emphasis on agricultural income stabilisation under the AgriStability programme (being part of the structure of the socio-economic safety net).

4.3. Farm income on an example of German solutions

Germany – as the EU Member State – is characterised by the developed and intensive agricultural production (although it does not constitute a significant GDP share in this country). For the purposes of developing the agricultural policy at both the Community and national level, the regulations regarding FADN are applied. However, the federation nature of this country, as well as differences in the development of the agrarian structure occurring in the Länder belonging to the former FRG and GDR (before the German reunification in 1990), determine some subtleties concerning the treatment of income categories. It is worth noting that, on one hand, the agricultural sector was traditionally privileged, given the preferences with regard to tax reporting or the accounting-related requirements. On the other hand, German farm holders cannot use solutions addressed to other branches of the economy.

The German experiences, particularly visible in the western Länder, show that income is an important outcome category and a base in the tax management system. In case of accounting oriented towards external needs, it is necessary to analyse legal developments on a continuous basis. This should guarantee that income and asset items will be properly presented, *inter alia*, for tax purposes¹⁰¹. In Germany, there is a system of national principles (accounting standards), known as *Grundsätze ordnungsmäßiger Buchführung* (GoB). This system includes the framework principles, known in Poland as generally accepted

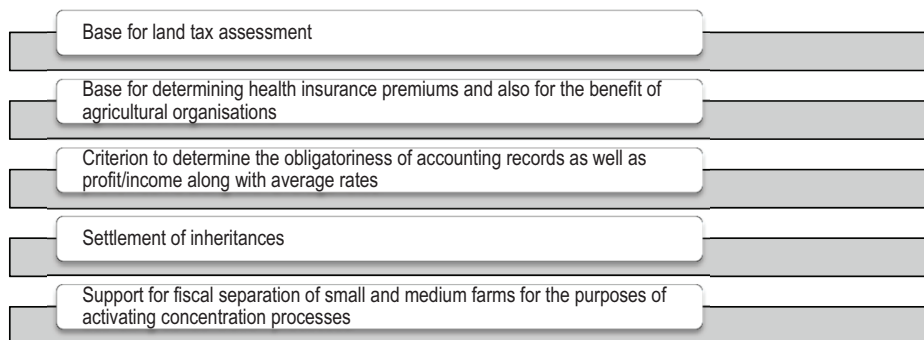
¹⁰⁰ Agriculture and Agri-Food Canada, AgriStability, Guide to the 2014 AgriStability Interim Application (1 of 5), <http://www.agr.gc.ca/eng/?id=1382542043445> (date of access: 6 December 2014).

¹⁰¹ In Germany, the basis for the tax law rules is primarily the Tax Ordinance Act (Abgabenordnung, AO); Abgabenordnung in der Fassung der Bekanntmachung vom 1. Oktober 2002 (BGBl. I S. 3866; 2003 I S. 61), die zuletzt durch Artikel 16 des Gesetzes vom 25. Juli 2014 (BGBl. I S. 1266) geändert worden ist.

accounting principles¹⁰² as well as the “lower-order” standards, including those regarding the method for making adjustments, correcting or archiving accounting information¹⁰³.

Special regulations regarding the agricultural sector include the category of the so-called tax value¹⁰⁴, which is a substitute for income but its significance goes far beyond tax records. Figure 4 shows the practical application of the tax value.

Figure 4. Application of the tax value category of a farm



Source: adaptation of considerations: J. Kulawik, P-Y. Lelong, J. Pawłowska-Tyszko (ed.), M. Soliwoda, *Tax systems in the European Union countries*, Multi-Annual Programme Report No. 83, IAFE-NRI, Warsaw 2013, p. 34; S. Jäckel, *Hofnachfolge und Existenzgründung. Steuern und Abgaben in der Landwirtschaft*, Deutscher Bauernverband (DBV), 2008;

http://www.junglandwirte.de/werkzeuge/materialkoffer/fachinformationen/doc_download/18steuervortragdbv2008 (date of access: 16 December 2014); R. Krägenbring, *Wertermittlung und steuerliche Bewertung für die Erbschaft- und Schenkungsteuer*.

The tax value is the 18-fold of pure income (i.e. income which includes total capital interest and remuneration for an agricultural entrepreneur). Figure 5 shows the diagram of the application of the tax value calculation procedure.

It should be noted that in the German solutions referring to farms, agricultural activity and forestry income is a component of aggregate taxable income. It should be noted, however, that there are specific regulations regarding income from animal production and, actually, livestock density

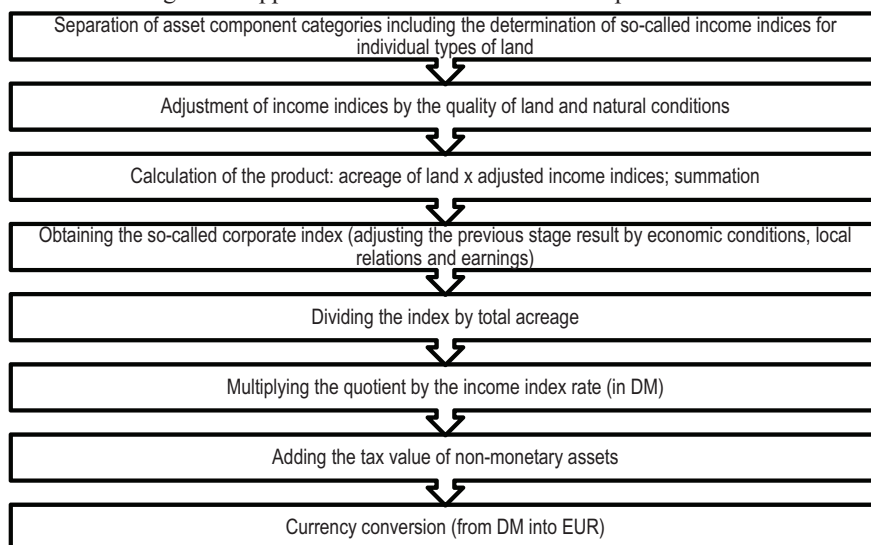
¹⁰² They were presented in Chapter I of the Accounting Act of 29 September 1994 (consolidated text of the Act, Journal of Laws of 2013, No. 0, item 330).

¹⁰³ O. Mußhoff, N. Hirschauer, *Modernes Agrarmanagement. Betriebswirtschaftliche Analyse- und Planungsverfahren* (2. Auflage), Verlag Franz Vahlen, München 2011, p. 71.

¹⁰⁴ J. Kulawik, P-Y. Lelong, J. Pawłowska-Tyszko (ed.), M. Soliwoda, *Tax systems in the European Union countries*, Multi-Annual Programme Report No. 83, Issues of Agricultural Economics, Warsaw 2013, p. 34.

(expressed in VE/ha¹⁰⁵). For farms, a tax-free amount has been provided. From tax income (prior to the calculation of the tax base), tax-free amounts and adjustments, compensating for the various types of inconvenience related to, *inter alia*, the place of residence, are deducted¹⁰⁶.

Figure 5. Application of the tax value with respect to a farm



Source: adaptation of considerations: J. Kulawik, P-Y. Lelong, J. Pawłowska-Tyszko (ed.) M. Soliwoda, *Tax systems in the European Union countries*, Multi-Annual Programme Report No. 83, LAFE-NRI, Warsaw 2013, p. 35.

Summing up the above considerations, it should be stressed that the procedure of reaching the tax base in personal income tax is characteristic of many continental European countries. In Germany, a sort of substitute for the farm income category is the tax value. Given the complexity of tax law and the severity of sanctions imposed by the developed tax system, farmers (especially those with small farms) may expect specific preferences. On the other hand, there are many areas of tax management using many legal tools reducing the amount of the tax burden.

5. Tax competitiveness in the perspective of amendments to the agricultural tax system in Poland

The competition is an integral feature of the market economy. In the literature of the subject, it is perceived as a prerequisite for the economic development, as it forces a search for better technical and organisational

¹⁰⁵ VE – livestock unit whose demand for feed in grain equivalent is 20 dt/year.

¹⁰⁶ Cf. R. Wesche, *Besteuerung der Land und Forstwirtschaft*, Report 1247/2009, Aid Infodienst, Bonn 2009, p. 41.

solutions, thus supporting the process of innovation in the economy¹⁰⁷. The EU Member States are strongly diversified in terms of the economic development. Different are also the strategies of this development, which depend on, *inter alia*, historical and economic conditions, including natural, cultural and social resources. The policy addressed to a given sector is a responsibility of public authorities. In each country, public authorities use specific funds accumulated under the pursued fiscal policy to implement their policy. The main set of fiscal instruments is the tax system, by means of which the state accumulates funds necessary for its proper functioning and implementation of its socio-economic functions. Hence, the development of the fiscal system under the market economy conditions requires a clear determination of the tax policy assumptions. A good tax system should stimulate the activity of market entities and the economic growth while reducing and eliminating phenomena which are socially and economically harmful. An important role, from the point of view of competitiveness, is played by the tax policy addressed to agriculture. In many countries, special tax solutions are applied in agriculture, which make this sector significantly privileged and create favourable conditions for its development.

5.1. Competitiveness – issues of definition and measurement

The competitiveness is one of the basic categories in economics. From an etymological analysis, it results that the competitiveness may be treated as the ability of an entity/individual to compete or to be/remain competitive¹⁰⁸. Many definitions of competitiveness, offered by English-¹⁰⁹ and German-language¹¹⁰

¹⁰⁷ L. Oręziak, *Tax competition vs. international capital flows*, International Journal of Management and Economics, Published by SGH Collegium of World Economy vol. 21, Warsaw 2007, p. 70.

¹⁰⁸ For example, “the ability of a company or nation to offer products and services meeting the standards of local and global markets at prices which are competitive and guarantee profits from resources involved in the production,

<http://www.businessdictionary.com/definition/competitiveness.html> (date of access: 1 December 2014). In Polish, “konkurencja” means “competition, rivalry” and is derived from Latin *concurrere*, i.e. to run together; W. Kopaliński, *Dictionary of foreign words and foreign language expressions* (first online edition), PRO-media CD, Łódź/ De Agostini Polska, Warsaw,

<http://www.slownik-online.pl/kopaliniski/C2FB55B87B4910E7C12565E90046C087.php>. In turn, in English language competition has its sources in Latin *competere* (to meet, to go together). Cf. *Competition*, <http://www.thefreedictionary.com/competition> (date of access: 1 December 2014).

¹⁰⁹ Cf. R.Z. Lawrence, *Competitiveness*, The Concise Encyclopedia of Economics. 1993. Library of Economics and Liberty, <http://www.econlib.org/library/Enc1/Competitiveness.html> (date of access: 1 December 2014).

literature of the subject are pleonastic i.e. they refer directly to competing or being competitive¹¹¹.

From the historical perspective, the foundations of the theory of competitiveness have been developed after separating and improving the system needed for describing “the perfect competition”. Quite interesting observations were included in the works of French physiocrats (with their leading representative, F. Quesnay). They claimed that under the conditions of free competition, the development of prices is most beneficial for the society, as it leads to the beneficial allocation of resources¹¹². A. Smith, analysing in-depth the mechanism of functioning of competitive markets, noted that, in the absence of government regulations, the expectations of both consumers (i.e. goods produced at the lowest possible cost) and producers (i.e., guaranteed adequate growth rate) may be fulfilled. Theoretical models by D. Ricardo have already contained a certain reference to the market structure of perfect competition¹¹³. A fundamental assumption for the functioning of perfect competition was the presence of a large number of manufacturers producing homogeneous goods. In addition, manufacturers were price takers only. Quite ambiguous were the opinions of J. S. Mill, who, in a quite controversial manner, supported the competition along with the presence of trade unions, and even the acceptance of socialism¹¹⁴. A theoretical framework for analysing perfect competition have been developed by A. Marshall, who popularised the application of mathematical methods in economics. According to Marshall, it is possible to achieve the market equilibrium states in the structure of perfect competition¹¹⁵. At the end of the 19th century, M. Weber, economist and sociologist, pointed out

¹¹⁰ I. Mecke, *Stichwort: internationale Wettbewerbsfähigkeit*, Gabler Wirtschaftslexikon, Springer Gabler Verlag (Herausgeber), <http://wirtschaftslexikon.gabler.de/Archiv/6868/internationale-wettbewerbsfaehigkeit-v10.html> (date of access: 1 December 2014); M. Castells, *Der Aufstieg der Netzwerkgesellschaft: Teil 1 der Trilogie Das Informationszeitalter*, Springer-Verlag, Heidelberg 2013, p. 105.

¹¹¹ Cf. R. Lawrence even claims that formulating the definition of „competitiveness” with respect to the entire economy is extremely difficult, even impossible. Cf. R.Z. Lawrence, *Competitiveness...*, op. cit.

¹¹² H. Landreth, D.C. Colander, *History of economic thought*, Polish Scientific Publishers PWN, Warsaw 2005, pp. 71-74.

¹¹³ A.J. Smith, *The competitive advantage of nations: is Porter's Diamond Framework a new theory that explains the international competitiveness of countries?* „Southern African Business Review”, Vol. 14, No.1, 2010.

¹¹⁴ Cf. J.S. Mill, *Principles of Political Economy with some of their Applications to Social Philosophy*, red. W.J. Ashley, 1909 (in:) *Library of Economics and Liberty*, <http://www.econlib.org/library/Mill/mlP14.html> (date of access: 1 December 2014).

¹¹⁵ Cf. A. Marshall, *Principles of Economics*, 1920 (in:) *Library of Economics and Liberty*, <http://www.econlib.org/library/Marshall/marP30.html> (date of access: 1 December 2014).

the relationship between the religious denomination dominant in a given country and the ability to multiply wealth. A major contribution to the development of the theory of competitiveness was the so-called Chamberlin-Robinson analysis of imperfectly competitive markets¹¹⁶. From a microeconomic point of view, of importance were the theories developed by J. Schumpeter (in his work “Capitalism, Socialism and Democracy” of 1942), in which the economist indicated the entrepreneurship as a determinant of the competitiveness of the socio-economic systems¹¹⁷. In the second half of the 20th century, the competitiveness analysis framework was extended by strategic management achievements (*inter alia*, P. Drucker, M. Porter)¹¹⁸.

Now, the competitiveness analysis should be extended by phenomena referred to as megatrends, *inter alia*, globalisation. Thanks to this phenomenon, many Member States could step on the path to growth¹¹⁹. As stated by Z. Pierścionek, “globalisation becomes micro-economisation ...the rapid growth of extraterritoriality of property and enterprises ... increases the spheres, which the state cannot control. At the same time, deregulation for these spheres is extended over the whole economy. ... free capital flows increase the headroom so much that in this way capital markets take the authority over from the state”.¹²⁰

Competitiveness – as a specific economic meta-category (as well as the efficiency or rationality) – refers to “various types of economic entities, sectors, national economy, products, their individual characteristics, resources, skills, abilities, management systems and their features, information, structures, procedures and strategies”¹²¹. The Nobel Prize winner, P. Krugman, disagrees with such a wide objective range of competitiveness. He believes that thinking in terms

¹¹⁶ Joan Robinson was perceived as the most known, in the first half of the 20th century, female economist, representing heterodox post-Keynesian thinking. *Joan Violet Robinson*, „The Concise Encyclopedia of Economics,” 2008. Library of Economics and Liberty. <http://www.econlib.org/library/Enc/bios/Robinson.html> (date of access: 1 February 2014).

¹¹⁷ Cf. S. Garelli, *The Fundamentals and History of Competitiveness* (in:) *World Competitiveness Yearbook 2014*, <http://www.imd.org/uupload/imd.website/wcc/Fundamentals.pdf> (date of access: 1 December 2014).

¹¹⁸ The evolution of the theory of competitiveness is described in detail in the study: A. Green, T. Mostafa, J. Presto, *The Chimera of Competitiveness: Varieties of Capitalism and the Economic Crisis*, Centre for Learning and Life Chances in Knowledge Economies and Societies, 2010, http://www.ioe.ac.uk/study/documents/Chimera_of_Competitiveness.pdf (date of access: 1 December 2014).

¹¹⁹ W. Szymański, *Does globalisation have to be irrational?* SGH Publishing House in Warsaw, Warsaw 2007, p. 104

¹²⁰ *Ibidem*, p. 142.

¹²¹ Z. Pierścionek, *Strategies of competition and development of enterprises*, Polish Scientific Publishers PWN, Warsaw 2007, p. 164.

of increasing the international competitiveness leads to wrong decisions in the area of public policy. He claims that defining the competitiveness of the nation, society or state is much more difficult than defining the concept of “enterprise”¹²².

Various concepts of competitiveness, shown in Table 10, prove that this economic category is very extensive and not clearly presented in the literature. Therefore, we need here some theoretical and methodical organisation, which results from the fact that “as a theoretical category, competitiveness is difficult to apply in studying actually developing economic processes, as it requires comparing to the external environment, i.e. with a competitive object”¹²³. We should agree with M. Gorynia and B. Jankowska who link “competitiveness” with the market economy system, and in fact with the “market regulation system”¹²⁴. According to Z. Pierścioneek, this category shows the largest number of convergences – in case of the economics with the concept of “economic efficiency”, from the perspective of management, the most similar categories are “efficiency” and “effectiveness”¹²⁵.

Table 10. Competitiveness in relation to economic systems

Competitiveness of economic systems	Competitiveness depending on the levels of analysis
<ul style="list-style-type: none"> • Competitiveness of enterprises • Competitiveness of the sector • Competitiveness of the group • Competitiveness of the national economy, including its components: <ul style="list-style-type: none"> • Competitiveness of the labour force in a given country, • Competitiveness of natural resources, • Competitiveness of infrastructure, • Competitiveness of enterprises, sectors, • Competitiveness in international blocks (e.g. EU) 	<ul style="list-style-type: none"> • Micro-micro competitiveness (concerning humans) • Microcompetitiveness (e.g. enterprises) • Mesocompetitiveness (e.g. industries, sectors, clusters) • Macrocompetitiveness (e.g. concerning national economies) • Megacompetitiveness (i.e. economies of integrated countries) or • Competitiveness in macro terms (macrocompetitiveness) • Competitiveness in meso terms (mesocompetitiveness) • Competitiveness in micro terms (microcompetitiveness)

Source: *adaptation of considerations Z. Pierścioneek, *Strategies of competition and development of enterprises*, Polish Scientific Publishers PWN, Warsaw 2007, pp. 166-167; ** M. Gorynia, *Levels of analysis in economic sciences*, „Economist”, No. 4, 1993.

¹²² P. Krugman, Competitiveness: A Dangerous Obsession, “Foreign Affairs” <http://www.foreignaffairs.com/articles/49684/paul-krugman/competitiveness-a-dangerous-obsession> (date of access: 1 December 2014).

¹²³ E. Skawińska, *Evaluation of the efficiency of the market economy* (in:) *Macroeconomics. Theoretical and practical aspects of the market economy*, by E. Skawińska, K.G. Sobiech, K.A. Nawrot, Polish Economic Publishing House, Warsaw 2008, p. 93.

¹²⁴ B. Gorynia, M. Jankowska, *Clusters vs. international competitiveness and internalisation of enterprises*, Difin, Warsaw 2008, p. 51.

¹²⁵ Z. Pierścioneek, *Strategies of competition...*, op.cit., p. 164.

As it results from Table 10, the competitiveness may be analysed in relation to various economic systems, starting from the smallest (enterprises, which is a special focus of interest of strategic management), to sectors, national economy or groups of countries (e.g. EU, CIS). It is worth stressing that competitiveness determinants differ significantly from the time horizon of analysis. It should also be noted that there are different types of competitiveness depending on the level of analysis. It results from that that competitiveness is relative, i.e. there must be an object entering the competition, as well as a reference object to which the relationship refers. Therefore, it is difficult to speak of the category of “global competitiveness”.

An attempt to typologise the competitiveness is made by M. Gorynia and B. Jankowska. According to them, we may organise various perspectives in terms of competitiveness, taking as a basis¹²⁶: (1) analytical level, (2) parties to/area of the market, and (3) method for explaining the competitiveness.

Due to the scope of further considerations, particular attention should be paid to the competitive category in macro-terms. Table 11 shows the most important definitions of the international competitiveness with respect to the macro-level. As noted by OECD experts, the trend of globalisation (related to, *inter alia*, the development of information technologies) has basically affected a change in the perception of the international competitiveness.

Table 11. Definitions of competitiveness of economic systems

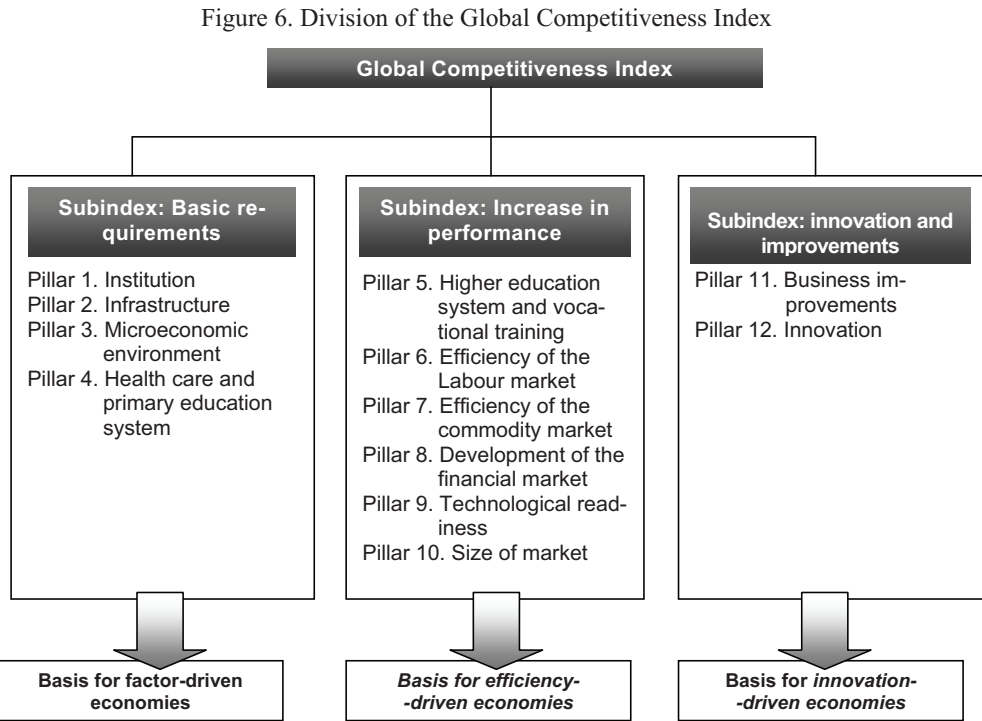
Author	Scope of definition
OECD (1996)	The ability of the country (economic system) to produce goods/services which, under the conditions of fair and free trade, may be accepted in the world market, in addition, there is an increase in real income in the long term.
The Global Competitiveness Report 2014 – 2015 (2014, p. 4)	Interrelated system of institutions, policies and factors which determine the productivity level of the country. The productivity level, in turn, determines the welfare level. The production level determines the amount of returns on investment in the economy, which are a fundamental factor of the economic growth.

Source: own elaboration.

The structure of the Global Competitiveness Index (GCI) is based on quite interesting methodological assumptions. For the first time, that index was applied in 2005 and used to measure the competitiveness of individual

¹²⁶ B. Gorynia, M. Jankowska, *Clusters vs. international competitiveness...*, op. cit., p. 52.

countries at the global level¹²⁷. Measuring the competitiveness in this context involves a synthetic assessment – evaluation of individual areas using partial assessments. As shown in Figure 6, the scope of assessment is relatively wide, as it is based on three partial “subindices” (indicators). The comprehensive assessment of global competitiveness is based on as many as 12 pillars.



Source: adaptation by X. Sala-I-Martin, B. Bilbao-Orsorio, A. Di Battista, M. Drzeniek Hanouz, C. Galvan, Th. Geiger., *The Global Competitiveness Index 2014–2015: Accelerating a Robust Recovery to Create Productive Jobs and Support Inclusive Growth*, World Economic Forum, 2014.

Problems related to precise defining of “competitiveness”, as well as problems concerning its measurement indicate that the issues concerning this economic category are still treated as a challenge for the economic analysis, both at the macro- and micro-level. It should be stressed that the competitiveness of complex socio-economic structures (e.g. states, transnational structures) is a result of complex interactions of micro-, macroeconomic and

¹²⁷ X.Sala-I-Martin, B. Bilbao-Orsorio, A. Di Battista, M. Drzeniek Hanouz, C. Galvan, Th. Geiger, *The Global Competitiveness Index 2014–2015: Accelerating a Robust Recovery to Create Productive Jobs and Support Inclusive Growth*, World Economic Forum, 2014.

financial factors¹²⁸. The definition scope of the competitiveness of economic structures has evolved: initially, the competitiveness referred to the effectiveness or ability to obtain benefits in international trade¹²⁹. Now, as stated by M. Tusińska, the category of competitiveness also takes into account certain aspects related to the socio-economic development or welfare of citizens¹³⁰. This is reflected, *inter alia*, in the presented Global Competitiveness Index (GCI).

Table 12 shows the “matrix of international competitiveness of states”. Attention should be paid to both micro- and macroeconomic factors as well as to the need to analyse economic phenomena related to the competitiveness in the long and short term.

Table 12. Matrix of international competitiveness of states

Item	Microeconomic factors	Macroeconomic factors
Short-term	<ul style="list-style-type: none"> • Productivity, prices, costs – labour costs in sectors with high labour intensity, index of prices and relative costs • Volume of export and share of production intended for export • Revealed comparative advantages of industry sectors • Balance of foreign direct investments (FDI), • Technologies, innovations, patents. 	<ul style="list-style-type: none"> • Total Factor Productivity (TFP) • GDP real growth rate, GDP <i>per capita</i>, real effective exchange rate, PPP • Shares of the economy of the given country in the global market • Real returns on capital involved in the industry: Tobin’s Q ratio • Macroeconomic balance: balance of foreign direct investments • Macroeconomic (internal) indices: unemployment rate, inflation rates
Long-term	Sustainable growth in profits and equity	Long-term: <ul style="list-style-type: none"> • Exchange rate • Interest rate • Inflation rate • Standard of living • HDI

Source: modification of A. Mitschke, *The Influence of National Competition Policy on the International Competitiveness of Nations: A Contribution to the Debate on International Competition Rules*, Physica-Verlag, Heidelberg 2008, p. 113.

¹²⁸ J. M. Fanelli, R. Medhora, *Finance and Competitiveness. Framework and synthesis* (in:) *Finance and Competitiveness in Developing Countries*, International Development Research Centre, Ottawa 2002, p. 17.

¹²⁹ For example, as considered by K.H. Hughes, the competitiveness of the state is related to two dimensions: (1) relative effectiveness (in dynamic or static terms) – here, of help are productivity indicators, as well as the measurement of productivity growth rates; (2) beneficial relations related to foreign trade. Cf. K.H. Hughes, *Building the Next American Century: The Past and Future of American Economic Competitiveness*, Johns Hopkins University Press, Baltimore 2005.

¹³⁰ M. Tusińska, *International competitiveness vs. socio-economic development*, Published by UE in Katowice, Katowice 2014, p. 44.

Referring to the right observation by M. Ratajczak, according to whom “the economics should become more pluralistic in terms of the acceptance of various theories and concepts sometimes referring to different paradigms”¹³¹, it is necessary to integrate reasonably various research approaches concerning the measurement of competitiveness. We should agree with E. Skawińska, according to whom “dominant is the understanding of the concept of competitiveness as a dynamic and evaluative process, in which result- and factor-based elements occur”¹³².

5.2. Tax competitiveness – tax determinants of the development of farms

Tax competition is a phenomenon associated with the process of globalisation and, in particular, with the increase in the international mobility of capital in order to seek the most beneficial investments, not only at home but also abroad. This means that the diversity of tax systems in the EU Member States is conducive to the emergence of tax competition. This phenomenon leads to a situation where the economic position and welfare of one Member State is threatened by the actions of the government of another country. This definition stresses the role of the tax system as a tool increasing the attractiveness of a given country in the eyes of foreign investors. Meanwhile, Nawrot notes that legal regulations regarding the tax system in a given country, are not competitive themselves, but become such only when used by a taxpayer from another country¹³³. Therefore, it seems important to consider this phenomenon not only at the international but also at the regional and national levels. It is also stressed by L. Oręziak, who points out that tax competition may take place both among individual regions of an individual country and among the countries¹³⁴. Furthermore, tax competition at the national level may create conditions to favouring, and hence the strengthening of selected sectors of the economy. This happens in some EU Member States, which apply various tools to support and privilege tax systems, *inter alia*, in agriculture. It should be noted, however, that this type of tax competition may lead to an excessive reduction in the tax burden by public authorities which may result in insufficient opportunities for financing functions performed by the state. Moreover, supporting some sectors of the economy forces an increase in the burden in other sectors, which may

¹³¹ M. Ratajczak, *Economics and economic education in the age of financialisation of the economy* (in:) *Economics for the future. Fundamental issues of the theory of economics and economic practice*, ed. by E. Mączyńska, PTE, Warsaw 2014.

¹³² E. Skawińska, *Evaluation of the efficiency...*, op. cit., p. 94.

¹³³ R.A. Nawrot, *Harmful tax competition*, Difin, Warsaw 2011, p. 38.

¹³⁴ L. Oręziak, *Tax competition vs. international capital flows*, International Journal of Management and Economics, Published by SGH Collegium of World Economy vol. 21, Warsaw 2007, p. 70.

undermine their competitive position. However, it should be stressed that tax competition understood in this way can serve the development of the national economy and the growth in the wealth of the society, resulting in the increased attractiveness of the entire country. Fiscalism of the economy forces various adaptation measures taking place both within an enterprise and in all its contacts with the environment¹³⁵.

The concept of tax competition may be referred to various phenomena. K. Burak¹³⁶ lists, *inter alia*:

1. phenomena consisting in a reduction in income taxes in order to increase the attractiveness of a country as a place of business,
2. phenomena consisting in creating tax law beneficial from the point of view of fiscal settlements. In this case, the subject of competition of the countries are not direct investments in these countries but the taxation of corporate profits regardless of the actual place of running business activity. This form of competition is the domain of so-called tax havens,
3. measures aimed at reducing tax rates in personal income taxes.

The above indicates that the problem of tax competition may be considered in at least two aspects, distinguishing between “competition for taxes” and “competition through taxes”. “Competition for taxes” means increasing own tax base at the expense of other countries, e.g. the functioning of tax havens. On the other hand, “competition through taxes” means, *inter alia*, the application of reductions in tax rates in order to attract foreign investments. However, this type of competition is always accompanied by competition for increasing the tax base.

In the literature of the subject, there are two trends of tax competition. The first one considers it as a positive phenomenon, because it forces a reduction in taxes and leads to the rationalisation of public expenses, which reflects the advantage of the EU Member States in attracting production factors¹³⁷. The second trend treats tax competition as a negative phenomenon leading to a shortage in budgetary resources and problems in guaranteeing the society benefits at the appropriate level. A positive effect of tax competition was described by Tiebout¹³⁸. In his study, he indicated that tax competition is a stimulus to choose the best solutions for running business activity. Brennan

¹³⁵ J. Skonieczny, *Adaptation measures of enterprises*, Journal of Organisation Review, No. 6, 2001.

¹³⁶ K. Burak, *Tax competition*, Information No. 1152, Bureau of Research, Warsaw 2005.

¹³⁷ E. Mendoza, L. Tesar, *Why hasn't tax competition triggered a race to the bottom. Some quantitative lessons from the UE*. Journal of Monetary Economics, vol. 52, 2005.

¹³⁸ Ch.M. Tiebout, *A Pure Theory of Local Expenditures*, The Journal of Political Economy, Vol. 64, No. 5, University of Chicago Press, Chicago 1956, pp. 416-424.

and Buchanan¹³⁹ also demonstrated the positive impact of tax competition, however, they indicated the effect of another mechanism – reduction in government expenses. Zodrow and Mieszkowski¹⁴⁰ perceive tax competition as a negative phenomenon and indicate that it leads to a significant decrease in budget income and then to the insufficient level of public goods provided to the society.

The economic theory indicates that tax competition is, however, desirable. It leads, *inter alia*, to the economic distinction between the countries and gaining the competitive advantage or the implementation of optimal solutions which are most desirable from the point of view of the economic strategy of a given country. It should be stressed that the diversification of tax systems reflect differences in natural resources and the productivity of a country, and the harmonisation of these differences leads to the ineffectiveness of the system.

5.3. Competitiveness of tax systems in the selected EU Member States

In the recent years, we may observe the growing interest in using tax instruments to promote economic and social objectives, also in agriculture¹⁴¹. A consequence of this progress is an attempt to introduce, into tax systems, special structural solutions for agriculture, which not only allow to help mitigate problems in this sector (i.e., the variability and level of income, structural problems, etc.), but also increase the competitiveness of farms in the European Union. Therefore, it may be concluded that under the conditions of internationalisation and globalisation, also the tax system may determine both the external and internal competitiveness of agriculture.

The tax system of each state has a significant effect on the financial situation of economic entities. Therefore, in designing tax systems it should be taken into account that each tax burden is treated by an entity as a reduction in its present or future financial status. According to S. Owsiak, excessively high tax rates may result in: weakening the economic growth rate, development of the “grey market”, outflow of capital abroad while limiting capital inflow from the outside¹⁴². This means that the structure of the tax

¹³⁹ G. Brennan, J.M. Buchanan, *Tax Instruments as Constraints on the Disposition of Public Revenues*, Journal of Public Economics, No. 9, 1978, pp. 301-318.

¹⁴⁰ R. Zodrow, P. Mieszkowski, *Pigou, Tiebout, Property Taxation, and the Underprovision of Local Public Goods*, Journal of Urban Economics 19, Houston, Texas 1986, pp. 356-370.

¹⁴¹ R. I. Dziemianowicz, R. Przygodzka, *Taxation rules of farms in the European Union and possibilities of their adaptation in Poland*, Wieś i Rolnictwo, No. 2 (131), Warsaw 2006, p. 220.

¹⁴² S. Owsiak, *Public finance. Theory and practice*, Polish Scientific Publishers PWN, Warsaw 1999, p.184.

system forces the specific behaviour of economic entities and thus affects their competitiveness.

Tax systems of the EU Member States are not uniform. They differ in terms of the amount of rates, tax thresholds, tax-free amounts, tax reliefs, etc. Differences occur also in the taxation of agriculture, which is usually treated in a more or less privileged manner. Usually, agriculture-related tax rules in the EU Member States are more competitive when compared to other sectors. Farmers may make use both of exemptions and reliefs and deductions regarding all taxpayers, as well as of special solutions. As part of an analysis, three groups of countries were distinguished differing among themselves in terms of the taxation of agricultural activity:

- countries having special, preferential tax systems in agriculture,
- countries with limited preferences addressed to agriculture,
- countries with systems without tax preferences for agriculture.

Preferential tax systems are all sorts of special solutions, provided for farms only and relating to the calculation of taxes from agricultural activity. Within the framework of special systems, it is possible to calculate estimated income. What is more, farmers may make use of additional privileges in the form of tax reliefs, exemptions, etc. The countries with such systems include: Austria, Belgium, France, Germany, Italy, Poland, Spain.

Preferences addressed to agriculture are all sorts of reliefs, exemptions to reduce the taxation burden of agricultural activity, and thus to support the development of this sector. In the countries where such systems occur, there are no special tax systems, specific only to agricultural activity and giving any privileges to this sector. These countries include: Czech Republic, Ireland, Norway, the UK.

Systems without tax preferences for agriculture are general tax systems, which also cover farmers. In these systems, there are no solutions which would include the specific nature of the agricultural production. These countries include Finland and Denmark. A comparison of the above solutions is shown in Table 13.

From the analysis of the tax systems in the Community countries it results that in most of the analysed countries preferential tax systems are addressed exclusively to small-scale farmers. The exception is Poland, where the special tax system covers almost all farmers regardless of the production scale and farm size. It should be added that in the analysed countries, apart from special solutions addressed to agriculture, farmers are covered by the general tax system and may pay taxes under this system while often receiving additional tax reliefs and exemptions. Also in this case, the exception is Poland, where agricultural production under the tax

system (except for special branches) is treated in a different manner than the remaining economic activity.

Table 13. Competitive tax solutions in the selected EU Member States

Country	Methods for determining agricultural income	Preferential tax solutions for agriculture (reliefs, exemptions, etc.)
Belgium	There are two methods for determining agricultural income: - actual, on a basis of accounting records - estimation, based on standards, for small-sized farms	- special preferential system - investment reliefs for agricultural activity, - special policy of depreciation of fixed assets, <i>inter alia</i> , rights to the agricultural production
Denmark	No solutions for agriculture	Reliefs and exemptions applied in the general tax system are applicable
Finland	No solutions for agriculture	Reliefs and exemptions applied in the general tax system are applicable
France	There are three methods for determining agricultural income, depending on turnover: - actual, on a basis of accounting records - actual, simplified, on a basis of accounting records - estimation, by lump sum, using standards for agriculture	- special preferential system - possibility of deducting costs of tax advisory services and costs of providing accounting services from income
Germany	Possibility of determining agricultural income: - by the tax administration authority, - estimation, using the unit valuation method, - based on cash accounting, - full accounting records.	- special preferential system - investment reliefs for agricultural activity - special depreciation rates for agricultural buildings and structures - possibility of deducting costs of tax advisory services and costs of keeping accounting books.
Poland	- No possibility of determining agricultural income due to the exclusion of agricultural income from income tax. Income tax replaced by agricultural tax - estimated income from the specialist plant and animal production (so-called special branches)	- special preferential system - investment reliefs for agricultural activity - special reliefs for farms located in mountainous and submountainous areas, due to natural disasters - possibility of using free agricultural advisory services
Ireland	Possibility of determining agricultural income on a basis of: - keeping accounting records to a minimum extent – however, this is not a separate tax system for agriculture - full accounting records	-special system with limited preferences for agriculture -relief on the use of ITC services
UK	No solutions for agriculture	- special system with limited preferences for agriculture - reliefs and exemptions applied in the general tax system are applicable. There is a profit equalisation mechanism, related to the variability of agricultural income.

Source: Own elaboration based on the OECD data.

An analysis of agricultural tax systems indicated that applied solutions with regard to the taxation with personal income usually meant hidden, indirect support of agriculture. A consequence of their application is usually a reduction in budget income. For example, according to estimates by the Ministry of Finance, as a result of the application of special preferences for farmers (exemption of farmers' income from personal income tax – PIT), budget income from PIT in 2012 decreased by PLN 1.7 billion, which accounted for almost 9% of total reliefs in PIT. Moreover, it should be added that agriculture was supported by local tax preferences by means of exemptions due to agricultural tax.

This situation is a manifestation of tax competition, both at the international and intranational, sectoral level. However, it should be stressed that such structures are not a result of the fact that governments of individual countries pursue a tax policy competitive towards other countries, but they should rather be treated as a manifestation of sovereignty in the area of developing national socio-economic strategies. This happens due to the fact that citizens of various countries differ in their preferences in the field of goods, which, in their opinion, should be provided by the state. Hence, in the countries where agriculture is a sector important for the development of the country, various tax preferences aimed at strengthening its market position are applied.

The OECD report¹⁴³ shows that tax preferences in agriculture are general and include: taxation of income, capital gains, transfer of a farm, consumption taxes. In many major EU Member States (Austria, Belgium, France, Germany, Italy, Poland and Spain), income from individual farms is taxed under separate, special tax systems. The presence of these systems has its historical and socio-economic justification. In some countries, where farmers are covered by the general tax system, there are solutions conducive to agricultural activity, e.g. taxation of average income from several consecutive years. In the analysed EU Member States, agricultural income is treated equally to other income and is taxable according to the same, progressive tax scale applicable also for other taxpayers (Table 14).

When analysing the data contained in Table 14, we may observe that Poland is a strong competitor towards the compared EU Member States in the agricultural sector. Polish farms are strongly privileged, as income derived therefrom is exempt from general income tax. Such a situation makes the Polish agricultural sector become highly competitive towards other branches of the economy both nationally and also internationally. The competitive system does not mean only low taxes, but also the creation of such tax rules which would encourage to run business activity in a given country or sector.

¹⁴³ *Fiscalite et securite social: Le sector agricole*, OECD 2005, p. 37.

Table 14. Tax rates from personal income in the selected EU Member States in agriculture in 2012

Country	Tax rate	
	minimum	Maximum
Austria	23	50
Belgium	25	50
France	5.5	40
Germany	0	45
Poland	income tax replaced by agricultural tax	income tax replaced by agricultural tax
Ireland	20	42
UK	20	40
Denmark	25.6	55.38

Source: Own elaboration based on *Fiscalité et sécurité sociale: Le secteur agricole*, OECD 2005, p. 37 and <http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/individual-income-tax-rates-table.aspx>

Referring to the above, the purpose of the tax system, when looking through the prism of competitiveness, should be to create the appropriate legal and fiscal conditions leading to achieving the competitive advantage in the domestic and foreign market. Thus, even in the countries with the general tax system, there are also instruments supporting the competitiveness of agriculture under the national economy. They include, *inter alia*, investment reliefs (including preferences with regard to investments in eco-friendly technologies), records related to depreciation or the longer period of settling a tax loss. In fact, the preferential treatment of the agricultural sector is determined by the method for determining income for tax purposes. The admissibility of determining income in a more or less simplified way should be treated as an element improving the competitiveness of the agricultural sector, both in terms of the economy of a given country and also in international terms.

Table 15 provides an overview of methods for determining tax income in the selected EU-15 countries. However, it does not include the Czech Republic, where – from the point of view of the taxation of the agricultural sector – an important position is taken by corporate income tax (CIT). This results from the significant share of corporate entities in that country. The occurrence of schedular systems in the UK and Ireland consists in the separate treatment of various income items (so-called schedules). It should be noted that in the countries where – for tax purposes – the category of income from agricultural activity has been singled out, there are also solutions pointing to the preferential treatment of agriculture (this situation occurs, *inter alia*, in Germany and France).

From a review of methods for estimating agricultural income for tax purposes it results that apart from actual methods based on accounting records some Member States apply so-called estimation methods for determining

income. These countries include: Belgium, Hungary, Germany, Spain, France and Austria. Estimation methods for determining tax income, however, do not mean freedom in its calculation. Each country applies such methods which are to make the estimated taxation base closer to its actual size while being the best methods in view of the interest of the taxpayer. The method for estimating income in each state results from the specific nature of agricultural activity as well as from legal and market conditions of running a farm.

Table 15. Income in fiscal terms and possibilities of estimated determination of income – review of solutions in the selected European countries

Country	Subject of taxation in income tax	Possibility of estimated determination of agricultural income	Criteria enabling estimated determination of agricultural income
Belgium	Actual income of the taxpayer: income derived from real estate, securities and other forms of capital investment as well as remunerations for work minus the costs of earning them. The presence of preferential forms of taxation and determination of agricultural income.	Yes, there are two methods for determining agricultural income: <ul style="list-style-type: none"> determining so-called actual agricultural income, determining estimated agricultural income related to the application of so-called estimated valuation. 	Provided that estimated income is determined based on standards developed in consultation with relevant agricultural organisations. Standards for estimating income are determined for various types of agricultural activity.
UK	Schedular system: separation of individual income categories for the purposes of calculating payable income tax: (1) earned income; (2) savings income, and (3) income from dividends. Tax schemes also include costs of earning income, i.e. expenses which can be deducted from tax revenues. Total income includes income from all sources, after the introduction of acceptable deductions applying to each source of income. As in the UK, the schedular system is applicable here.	No, agricultural activity is treated as any other form of business activity.	Not applicable.
Ireland	Income tax includes: (1) income from public securities; (2) income from business activity and practising specialist professions is treated as fiscal, different forms of capital income including interest received for loans granted, income from securities, from real estate abroad; (3) income from work, including earnings, retirement pensions and disability pensions, obtained perpetuities (4) income from dividends are taxed at source. A special method for determining tax income for farms.	Method for determining income, adapted to the agricultural production.	A farm should, to a minimum extent, keep accounting records (e.g. division of costs into fixed and variable).

Table 15 cont.

The Netherlands	Income tax includes annual tax income of a person: (1) income from work and residential real estate, as well as from business activity, (2) income from owned stocks or shares, (3) income from savings and investments. Payable income tax is a sum of the fiscal burden calculated for three above-mentioned tax income categories. For each source of income, tax revenues are collated with the corresponding costs of earning them.	Farmers, running activity, are required, just like entrepreneurs, to keep a minimum scope of financial reporting, including the use of the accrual method.	Not applicable.
Hungary	The subject of taxation in income tax is actual tax income of a taxpayer, including: (1) consolidated income except for self-employment; (2) income from self-employment, (3) other income. Separately taxed tax income include: additional benefits paid to employees (e.g., bonuses), capital gains, income from business activity as well as rents from letting or leasing real estate. There are possibilities of the preferential treatment of agricultural income in semi-subsistence family farms.	Possibility of not including agricultural activity income; possibility of submitting a simplified income statement, specifying estimated tax revenues and at least 20% of tax costs; possibility of using so-called simplified entrepreneurial tax (from tax revenues)	Ad. 1. With agricultural activity turnover < EUR 2,384 Ad. 2. With tax revenues > EUR 2,384, but < EUR 15,984
Germany	Aggregate tax income includes: (1) agricultural and forestry income, (2) income from business activity, (3) income from the provision of professional services, (4) income from work, (5) income from renting, letting, leasing of real estate, (6) income from capital investments, (7) income from other sources (<i>inter alia</i> , profits from speculative transactions).	Yes; possibility of determining agricultural income by the tax administration authority or estimated determination of agricultural income, using the unit valuation method.	(1) Acreage of agricultural land of the farm < 20 ha; (2) animal population < 50 livestock units; (3) economic value of agricultural land < DM 2,000
Spain	Aggregate tax income includes: (1) income from work, (2) income from business activity (including agricultural activity), (3) capital gains, (4) income from, <i>inter alia</i> , agricultural benefits of production cooperatives and producer groups. For tax purposes, aggregate income of a taxpayer from various sources is divided into "special" (including profits from the sale of assets) and simple tax base (various types of income).	Yes, in addition to the method for determining so-called direct income (only in case of accounting records) it is possible to determine so-called estimated direct income (with simplified accounting records) and to determine agricultural income on a basis of coefficients.	In determining so-called estimated direct income: farm income < EUR 600,000 a year; in determining income using coefficients: (1) annual turnover < EUR 450,000, including from agriculture < EUR 300,000; (2) value of goods sold < EUR 300,000 a year.

Table 15 cont.

France	Tax income is divided into seven categories: (1) property income, (2) income from non-agricultural business activity, (3) farm income, (4) income from work, (5) retirement pension income, (6) awards of company managers, (7) capital gains.	Yes, possibility of determining estimated income (under the lump sum taxation), as well as actual income (under the simplified tax system).	Under the lump sum taxation system: farmers, whose turnover achieved during the fiscal year for a period of two years < EUR 76,300. Under the simplified system (simplified accounting): farmers, whose annual turnover > EUR 76,300 and lower than EUR 350,000. Not applicable.
Italy	Tax income includes: (1) income from work, (2) income from business activity, (3) income from capital and land, (4) other forms of income.	Yes, agricultural activity income being a part of aggregated income.	Not applicable.
Austria	Tax income includes (1) income from work, (2) income from business activity or practising professional occupations (3) investment income.	Agricultural income can be estimated using a simplified method in case of farms not keeping accounting records: (1) partially standardised rate, (2) standardised rate.	Simplified methods may be applied if the assessed value (AV), determined authoritatively by the tax administration and dependent on the profitability of a farm, is lower than EUR 150,000.
Sweden	Tax income includes (1) income from business activity, (2) income from work, (3) income from capital.	No tax preferences relating to agricultural activity income.	Not applicable.
Finland	Tax income includes (1) earned income (charged in addition with local, "municipal" and church tax; (2) income from capital.	As above.	Not applicable.
Poland	Tax income resulting from agricultural activity, is determined (1) by applying estimated standards for income from the specific area of cultivation or livestock unit, as referred to in the MF regulation; (2) as the difference between revenue from dealing with these branches of production and incurred costs of earning income plus the increase in the animal herd at the end of the fiscal year as compared with the status at the beginning of the year and minus the value of losses in this herd during the fiscal year – in case of keeping accounting books showing tax revenues.	Agricultural tax (mixed), personal income tax from special branches (in case of conducting specialist plant or animal production).	In case of income tax from special branches, if no books showing revenues are kept, the possibility of using the standards contained in the regulations of the Minister of Finance.

Source: adaptation of considerations J. Kulawik, P-Y. Lelong, J. Pawłowska-Tyszo (sci. ed.), *M. Soliwoda, Tax systems in the European Union countries, Multi-Annual Programme Report No. 83, IAFE-NRI, Warsaw 2013.*

5.4. Competitiveness of tax systems in the opinion of Polish individual farm holders

The competitiveness of farms is affected by many elements. One of them is the tax burden, which is treated by taxpayers as a reduction in their present or future financial status. The main tax for farms in Poland is agricultural tax. It is commonly regarded as tax having no significant impact on the amount of the financial burden of agricultural activity, which may contribute to achieving the competitive advantages of the agricultural sector. This opinion is confirmed by the results of surveys carried out by K. Gruzziel about the opinions of farmers on the issue of the taxation of agriculture. The analysis was done using an interview questionnaire. The survey has been carried out in a group of 101 farmers from the Łódzkie and Mazowieckie voivodeships.

From the surveys carried out by K. Gruzziel¹⁴⁴, it results that farmers rate positively the amount of the existing financial burden due to agricultural tax. Of all responses, about 49.5% were those which rated agricultural tax positively (Table 16). That value was composed of the sum of responses stating that agricultural tax was a small and proportional burden with respect to gained income. The burden of agricultural tax was best rated by farmers running pig farms – 66.7% of the responses. According to K. Gruzziel, this opinion is probably the result of a small dependence of the pig production on the land resource which is a basis for calculating agricultural tax. The least favourable rating, at the level of 25% of the responses, was given to agricultural tax by farmers running dairy farms, those running mixed farms – 50% of responses and those running plant farms – 54.6%.

Among farmers running farms in individual area groups, the largest degree of acceptance towards agricultural tax is expressed by owners of farms with an area of 10-20 ha (56.8% of the responses). The share of responses positively rating agricultural tax by owners of the smallest farms amounted to 43.5%, and by owners of farms of more than 20 ha – 45.5%. Among owners of the smallest farms, only 15.2% believe that current agricultural tax is a small burden in relation to gained income and about 40% of them indicate that current agricultural tax is too high for small-sized farms and too low for large-sized farms gaining high income (30.4% of the responses). Slightly different opinions on that issue were held by owners of farms of more than 20 ha. Only 9.1% of them believed that agricultural tax was a small burden in relation to gained income and none of the surveyed farmers indicated that that tax was too low for

¹⁴⁴ K. Gruzziel, *Agriculture taxation in the opinion of individual farmers*, Annals of the Polish Association of Agricultural and Agribusiness Economists, vol. VIII, book 4, Warsaw-Poznań-Kraków 2006, pp. 12-127.

large-sized farms gaining high income. These results clearly indicate that agricultural tax does not constitute a significant burden for farmers running larger farms. At the same time, they stressed the excessive burden in relation to gained income, in particular with regard to farms with the small area of agricultural land.

Among farms of each agricultural type, farmers running pig farms do not rate agricultural tax as a too high burden for small-sized farms, but as too low for large-sized farms gaining high income – 66.7%. It should be noted that the average size of analysed pig farms amounted to 12.3 ha. Therefore, this opinion results probably from the relatively small area of pig farms. As shown by the above-described results, the opinion that agricultural tax is too low for farms with a large area has not gained acceptance among farmers running farms of more than 20 ha. This shows that farms of more than 20 ha identify themselves with a group of large-sized and efficient farms.

Table 16. Rating the burden and functioning of agricultural tax in the opinion of farmers, by area groups and agricultural types of farms

Item	Area of AL [ha]			Agricultural type of a farm				On average
	<10	10-20	>20	plant	pig	dairy	mixed	
How do you rate the burden due to agricultural tax?								
a) as a small burden in relation to gained income	15.2	18.2	9.1	18.2	0.0	0.0	17.6	15.8
b) as proportional to gained income	28.3	38.6	36.4	36.4	66.7	25.0	32.4	33.7
c) as too large burden in relation to gained income	30.4	20.5	36.4	27.3	33.3	62.5	22.1	26.7
d) I have no opinion, it is difficult to rate	23.9	18.2	18.2	13.6	0.0	12.5	25.0	20.8
e) other response	2.2	4.5	0.0	4.5	0.0	0.0	2.9	3.0
How do you rate the functioning of agricultural tax?								
a) efficiently deals with differences in farming conditions	13.0	20.5	36.4	13.6	0.0	12.5	22.1	18.8
b) agricultural tax is too high for small-sized farms	39.1	40.9	36.4	50.0	0.0	62.5	35.3	39.6
c) agricultural tax is too low for large-sized farms gaining high income	30.4	27.3	0.0	36.4	66.7	12.5	22.1	25.7
d) I have no opinion, it is difficult to rate	21.7	22.7	18.2	9.1	33.3	12.5	26.5	21.8
e) other response	0.0	0.0	9.1	0.0	0.0	0.0	1.5	1.0

Source: elaborated based on the studies carried out by K. Gruziel, *Agriculture taxation in the opinion of individual farmers, Annals of the Polish Association of Agricultural and Agribusiness Economists*, vol. VIII, book 4, Warsaw-Poznań-Kraków 2006, p. 127.

The above surveys indicate that the small financial burden and, above all, the fact that it is not much felt in current financing decisions may significantly contribute to increasing the competitiveness of farms at the national or Community level. What is more, the small burden for farms in relation to gained income may contribute to increasing their level of competitiveness at the

sectoral level. The above opinions show, however, that the agricultural tax gives privileges to stronger, larger farms, and thus becomes an ineffective instrument for developing the competitiveness within the agricultural sector.

Under these conditions, it seems necessary to change the taxation system of Polish agriculture. As main trends of changes in this system, M. Podstawka mentions the introduction of property tax on land and agricultural income tax¹⁴⁵. He justifies the need to make changes with the fact that in the market economy functions stimulating the production level and structure are governed by the market and not by tax, as in the previous economy model. He believes that the introduction of new tax solutions into agriculture should increase the effectiveness of implementing the fiscal function and motivate farmers to behave in the “market-oriented” manner.

The change in the taxation system is also supported by farmers, which is confirmed by the studies carried out by M. Wasilewski and K. Gruzziel¹⁴⁶ about the opinions of farmers regarding the assessment of the functioning of agricultural tax, their concerns related to income tax and future rules of the functioning of this tax. The studies were carried out at individual commodity farms covered by the Farm Accountancy Data Network – FADN system. The studies were carried out in 2010, using an interview questionnaire. The sample was random and included 302 farms throughout Poland. The results of the analyses are presented in Table 17.

The dominant opinion among the respondents to replace the existing agricultural tax with another type of the fiscal burden would be reasonable provided that it did not increase the amount of the tax burden (32.9% of the responses, on average). Most responses (40.9%) in this regard were from the economically weakest farms. According to K. Gruzziel and M. Wasilewski, this may mean that farmers running farms with the lowest level of ESU (2-4) are worried that the introduction of new solutions in the field of taxation would increase their fiscal burden. In the opinion of about 28% of farmers, the suggestion of changes in agriculture taxation would be reasonable, but only in case of creating an appropriate system of tax and income reliefs and deductions. On the other hand, 25.7% of farmers opt for maintaining the existing rules of the agriculture taxation system. It should be added that most opinions in this regard (40%) were reported among the respondents from farms of “livestock grazing

¹⁴⁵ M. Podstawka, *Agriculture taxation and prospects of its changes*. SGGW Publishing House, Warsaw 1995, p. 104.

¹⁴⁶ M. Wasilewski, K. Gruzziel, *Functioning of the tax system in agriculture and proposals of changes in the opinion of individual farm operators*, Finance, Financial Markets, Insurance No. 50, University of Szczecin Scientific Journals, Szczecin 2012.

system” agricultural type. This situation may mean that agricultural tax in these farms is a low burden and the adoption of a different kind of taxation, for example, of income would significantly increase the amount of their fiscal burden, and thus, it could worsen their current competitive position.

For about 32% of the respondents, agricultural tax is a too high burden. This situation applies to small-sized farms, gaining low income and being economically weak. In addition, the study results indicate that opinions of farmers on the amount of the tax burden for large-sized farms are similar, irrespective of the study sample. About 30% of the respondents indicate that agricultural tax is a too low burden for large-sized farms, achieving high economic results. The lowest number of responses in this regard was found in the economically strongest farms (9.1%). This may mean that, in the opinion of these farmers, agricultural tax constitutes a heavy burden in relation to gained income.

From the studies it also results that for most owners of farms who use AL in the production process to a greater extent, the existing basis for calculating the tax burden is not appropriate. This opinion is confirmed by about 21% of farmers involved in the animal production. These results show that there is an urgent need to make changes in the system, and especially in the way of calculating tax, as the current system favours specific types of farms, thus supporting the increase in their competitiveness. These results lead to a conclusion that the fairness and equality of taxation are not always identical to competitiveness.

In addition, the studies have also shown that taxation with agricultural tax is not conducive to equalise management conditions between farms due to the lack of the current and regular verification of tax zones (10.7% of the responses), outdated classification of the AL quality for taxation purposes (9.4% of the responses), and possibility of conducting the diverse plant production whose efficiency is not determined by the AL quality or tax district (8.7% of the responses) (Table 17).

The studies indicate the need to make changes in the agriculture taxation system. The major shortcoming in the current system is the lack of the stimulating function. According to most farmers, agricultural tax should be maintained in small-sized farms and changed in large-sized, economically strong farms and this means that the vast majority of farmers opt for the right to choose the taxation system. This solution would reduce the fiscal burden of semi-subsistence farms and would increase the tax amount in large-sized, economically strong farms. It should, however, be considered whether or not the

adoption of such solutions would negatively affect the competitiveness of the strongest farms in Poland.

The analyses carried out showed that the financial situation of farms may depend on the fiscal policy pursued, *inter alia*, through the tax system. The existing legal regulations affect the market power, development and behaviour of enterprises and thus they affect their competitiveness. As previously shown, the taxation of farms in Poland is subject to different rules than that of enterprises from non-agricultural industries and shows significant differences against a background of other countries. This diversification of tax systems determines the competitiveness of a given sector not only at the national but also at the regional or international level.

Table 17. Assessment of the existing functioning of agricultural tax and suggested changes with regard to agriculture taxation

Item	Area of AL [ha]			Economic size (ESU)					Agricultural type				On average
	<15	15-30	>30	2-4	4-8	8-16	16-40	>40	TF1	TF5+6	TF7	TF8	
How do you rate the proposal of replacing agricultural tax by another tax?													
a) taxation of farms should function according to the current rules	24.2	26.0	26.4	27.3	27.8	22.6	18.9	28.6	23.6	40.0	27.5	24.4	25.7
b) only when new solutions do not increase the amount of the tax burden	39.5	30.5	29.7	40.9	32.1	32.1	32.1	31.4	34.8	18.3	37.5	33.0	32.9
c) when the system of applicable reliefs and income and tax deductions is created	25.0	28.2	31.1	20.5	26.2	35.8	22.9	33.7	25.0	25.0	25.0	27.8	28.2
d) provided it contributes to changes in the agrarian structure and increases the competitiveness of farms	7.3	4.6	4.7	6.8	6.4	3.6	3.8	5.7	2.2	6.7	5.0	6.3	5.5
e) provided it contributes to increasing the scale of investment in order to obtain tax benefits	3.2	9.2	8.1	2.3	6.4	7.1	9.4	11.4	4.5	10.0	5.0	7.4	7.0
How do you rate the fiscal functioning of agricultural tax?													
a) efficiently includes differences in management conditions	21.5	22.7	37.7	23.3	25.3	29.7	27.1	45.5	40.0	26.8	23.7	24.8	27.5
b) agricultural tax is too high for small-sized farms	33.6	34.4	27.9	41.9	34.7	21.6	27.1	36.4	21.3	28.6	31.6	38.9	21.7
c) agricultural tax is too low for large-sized farms gaining high income	35.5	32.8	20.5	25.6	31.8	33.8	27.1	9.1	24.0	32.1	36.8	26.8	29.5
d) agricultural tax is too low in the case of farms with the small area of AL	6.5	8.6	9.8	9.3	7.1	10.8	10.4	4.5	12.0	7.1	7.9	7.0	8.4
How do you rate the tax base adopted in calculating agricultural tax (2.5 dt of rye)?													
a) equivalent of 2.5 of rye is the appropriate base for calculating agricultural tax	45.5	43.5	49.2	54.3	45.2	43.2	45.7	46.2	38.5	49.1	42.1	52.0	46.0
b) importance of rye is decreasing therefore it is advisable to adopt dt of wheat as a base for calculating agricultural tax	9.1	15.7	9.7	8.7	12.7	12.2	8.7	11.5	17.9	10.9	10.5	8.0	11.5
c) this base is appropriate only in relation to farms involved in plant production	19.1	16.5	17.7	19.6	15.9	17.6	21.7	19.2	24.4	14.5	15.8	14.7	17.8
d) this base does not include the specific nature of farms involved mainly in animal production	22.7	20.9	20.2	17.4	22.3	23.0	17.4	23.1	15.4	23.6	28.9	22.7	21.3

Table 17 cont.

In your opinion, does making agricultural tax conditional upon the quality of land and the tax district equalise differences in management conditions among farms?															
a) yes	57.3	61.0	54.8	57.9	60.9	50.0	50.0	50.0	50.0	75.0	52.3	58.3	62.5	58.5	57.5
b) no	42.7	39.0	45.2	42.1	39.1	50.0	50.0	50.0	50.0	25.0	47.7	41.7	37.5	41.5	42.5
If NO, it is so because:															
a) tax districts do not differentiate benefits of farms due to the economic location	14.6	11.0	18.3	7.9	14.5	21.9	12.5	10.0	15.4	14.6	12.5	13.1			14.7
b) quality of AL does not differentiate production conditions in individual years. e.g. there are various environmental conditions	20.8	20.0	19.2	18.4	21.0	21.9	20.0	10.0	18.5	25.0	12.5	21.5			20.1
c) it is required to verify the rules of designating tax zones	12.5	12.0	7.7	15.8	11.6	4.7	15.0	5.0	13.8	2.1	0.0	14.6			10.7

Source: elaborated based on M. Wasilewski, K. Gruzziel, *Functioning of the tax system in agriculture and proposals of changes in the opinion of farmers, Finance, Financial Markets, Insurance No 50, University of Szczecin Scientific Journals, Szczecin 2012.*

In the analysis of the competitiveness of the tax system, of extreme importance may be the studies regarding farmers' opinions on the perception of taxation of farms as a factor determining the competitiveness of agriculture, both with regard to other sectors of the economy, as well as to other EU Member States. Such studies were carried out by K. Gruzziel¹⁴⁷ on a group of 101 farmers from the Mazowieckie and Łódzkie Voivodeships in 2005 (Table 18). For the studies, an interview questionnaire was used. The surveyed group included farmers participating in training on taxes, and the interview was carried out with the farmers after training.

From the studies it results that more than half of the farmers – 54.5% believe that agriculture should be subject to different tax rules than other branches of the economy. The greatest degree of acceptance for the taxation of farms according to different rules than other companies was expressed by the owners of farms with an area of more than 20 ha of AL and gaining income of PLN 0 (72.2% and 71.4% of the responses, respectively) and the farmers with farms of granivorous animals and field crops agricultural types (66.7% and 68.2%, respectively). Different rules of taxation of agricultural and non-agricultural income are treated by the farmers as a fully reasonable solution which is to support the process of equalising the conditions of running business activity. They add, however, that different rules of the taxation of economic activity income do not solve the problem of equalising the management conditions.

Unfortunately, farmers do not have sufficient knowledge about the taxation rules for entities engaged in non-agricultural production activity, which may confirm the opinions on the unwillingness to make changes in the present system. On average, 57.4% of the farmers declared that they had very general information on the taxation rules for non-agricultural entities, 36.6% have no knowledge about the surveyed issue and only 5% confirmed knowledge of the Polish tax system. The highest knowledge with regard to the assumptions of the tax system was shown by the farmers with farms of 10-20 ha, running mixed-type farms showing a loss on business activity. This situation could confirm the knowledge of tax accounting principles and the ability to use the so-called tax optimisation. Precise knowledge of the Polish tax system was not confirmed mostly by the farmers from the largest farms, gaining income of about PLN 0 and of granivorous animals and dairy cattle agricultural types (Table 18). This

¹⁴⁷ K. Gruzziel, *Taxation as the factor of competitiveness of agriculture in the opinion of individual farmers*. Annals of the Polish Association of Agricultural and Agribusiness Economists, Warsaw-Poznań-Lublin 2008, vol. X, book 1, pp. 102-106.

may indicate the lack of farmers' interest in the taxation rules and hence the lack of willingness to choose the most beneficial taxation method for agricultural activity.

The lack of knowledge on the taxation and methods for calculating income is also indicated by the opinions of the farmers concerning the comparison of the conditions of running agricultural activity in Poland and other EU Member States. On average, 68.3% of the farmers claimed that the conditions of running agricultural activity in the EU were more favourable than in Poland due to higher subsidies to the agricultural production, and 27.7% claimed that it was due to the fact that EU farms were better equipped with means of agricultural production. Only 1% of the farms claimed that the conditions of running agricultural activity in Poland were easier due to the low competition in acquiring new outlet markets. That thesis was supported only by income-making farms, with an area of 10-20 ha of AL and of the "crops and various animals" agricultural type.

It should also be noted that Polish farmers have no knowledge about the agriculture taxation systems in the EU Member States (49.5% of the respondents) and 43.6% of them are familiar with the general assumptions only. Comforting is the information that about 7% of the respondents declared interest in the subject of taxes in the EU. They were the owners of the largest farms of the "crops various and animals" agricultural type and those suffering losses.

In conclusion, in the opinion of the farmers, the main reason for the different conditions of running agricultural activity in Poland and other EU Member States is the diversified level of subsidies to production and the fact that EU farms are better equipped with means of production. The competitiveness factor, as an aspect contributing to the diversification of management conditions, was noted by the farmers from the farms with an area of 10-20 ha of AL, of the "crops and various animals" agricultural type and those gaining income. At the same time, those farmers declared knowledge of the Polish tax system and interest in the subject of taxes in the EU. According to K. Gruziel, it may therefore be concluded that they are aware of the possible strengthening of the competitiveness of Polish agriculture.

Table 18. Taxation as the factor of competitiveness of agriculture in the opinion of individual farmers

Item	Area of AL [ha]			Agricultural type of farm				Agricultural income level		
	<10	10-20	>20	field crops	granivorous animals	dairy cattle	crops. various animals	more than 0	about 0	loss
Do separate agriculture taxation rules equalise the management conditions in agriculture and other sectors of the economy?										
a) Agriculture should not be subject to the same tax rules as other companies	50.0	54.5	72.7	68.2	68.7	25.0	52.9	61.1	71.4	48.3
b) The very exclusion of agricultural income from taxation with income tax is too little in order that the conditions were comparable	6.5	6.8	18.2	13.6	0.0	0.0	7.4	8.3	0.0	8.6
c) Exclusion of agricultural income from taxation is a chance to equalise the conditions of running production activity in agriculture and other sectors of the economy	2.2	9.1	0.0	4.5	0.0	12.5	4.4	2.8	14.3	5.2
d) Equalising the management conditions in agriculture and other sectors of the economy is not reasonable	2.2	2.3	0.0	0.0	0.0	12.5	1.5	2.8	0.0	1.7
e) I have no opinion	41.3	29.5	18.2	22.7	33.3	50.0	35.3	27.8	14.3	39.7
Are you familiar with the taxation rules for entities dealing with non-agricultural production activity?										
a) yes. I am well familiar with the assumptions of the Polish tax system	4.3	6.8	0.0	4.5	0.0	0.0	5.9	2.8	0.0	6.9
b) I have very general information	53.2	63.6	54.5	77.3	66.7	50.0	51.5	69.4	42.9	51.7
c) no	43.5	29.5	36.4	18.2	33.3	50.0	41.2	25.0	57.1	41.4
										36.6

Table 18 cont.

Are you of opinion the conditions of running agricultural activity in Poland differ from those in the EU Member States?											
a) in the EU Member States conditions of running activity are more favourable (higher level of subsidies)	65.2	70.5	72.7	68.2	33.3	50.0	72.1	77.8	85.7	60.3	68.3
b) in the EU Member States management is much simpler than in Poland (EU farms are better equipped with means of production)	23.9	36.4	9.1	36.4	66.7	37.5	22.1	25.0	28.6	29.3	27.7
c) running agricultural activity in Poland is easier due to the low competition in acquiring new outlet markets for manufactured products	0.0	2.3	0.0	0.0	0.0	0.0	1.5	2.8	0.0	0.0	1.0
d) I have no opinion	21.7	6.8	18.2	18.2	0.0	25.0	13.2	8.3	0.0	20.7	14.9
Are you familiar with the taxation rules for entities dealing with non-agricultural production activity?											
a) yes I am interested in EU taxes	0.0	11.4	18.2	4.5	0.0	0.0	8.8	5.6	0.0	8.6	6.9
b) only general assumptions	45.7	38.6	54.5	72.7	33.3	25.0	36.8	44.4	71.4	39.7	43.6
c) no	54.3	50.0	27.3	22.7	66.7	75.0	55.4	50.0	28.6	51.7	49.5

Source: elaborated based on Gruziel K.: *Taxation as the factor of competitiveness of agriculture in the opinion of individual farmers. Annals of the Polish Association of Agricultural and Agribusiness Economists, Warsaw - Poznań - Lublin 2008, vol. X, book 1, pp. 102-106.*

In 2014, the employees of the Agricultural Finance Department, in coordination with AAC Minikowo, carried out the studies aimed at learning the farmers' opinions on the factors of competitiveness of Polish farms in the context of changes in the tax system.

The studies were carried out on a group of 98 farmers from the Kujawsko-Pomorskie voivodeship. An interview questionnaire was used to obtain the source data. In the analysis, the following criteria of grouping farms were used: area of agricultural land (up to 20 ha, between 20 and 50 ha and more than 50 ha of AL) and the farm type due to the source of income (farms with income from agricultural activities only, farms with income from agricultural activities and from retirement pensions and disability pensions and farms with income from agricultural and non-agricultural activity (contract work). Due to the fact that among the surveyed categories there were no farms with income from agricultural activity and from retirement pensions and disability pensions and contract work, such a group was not singled out). The classification of farms into individual groups was made by farm owners themselves.

From the analyses it results that the majority of the surveyed farmers see the drawbacks of the current tax system. The major development barrier of Polish farms for almost 40% of the respondents is the very amount of the tax burden. For about 37% of the surveyed farms, the existing amount of agricultural tax constitutes a heavy burden on farm income. This is most emphasised by the smallest farms (about 64% of the respondents), while this tax is least perceptible by the largest farms (10.5% of the responses). For farms with income from agricultural activity only, the agricultural tax was a large financial burden (58.2%), while in the case of farms with extra income from retirement pensions and disability pensions, this tax was least burdensome (15.3% of the respondents).

For the vast majority of farms – 92.2% (area of AL) and 31% (type of farm), the method for calculating and collecting agricultural tax does not present any difficulties, due to the fact that this tax is calculated by communes and farmers do not interfere in the methodology for calculating thereof.

According to the surveyed farmers, classified according to the size of the area, the biggest defects of the current tax system included: the lack of its relation to farm income (91.6% of the respondents) and the lack of possibilities to make tax reliefs and deductions (74.9% of the responses). More than 60% of the respondents pointed to the unequal treatment of farms in relation to entities involved in non-agricultural activity, which, however, was associated with the lack of possibility to use tax reliefs and deductions. From the interviews with the farmers it resulted that the current system could be enriched with such

privileges. Of minor importance for the surveyed farmers was linking agricultural tax with the rye price, and hence, the agricultural tax instability caused by a change in the market situation. This may mean that for farmers the rye price is a minor determinant of their profitability.

Table 19. Assessment of the functioning of the existing tax system

Item	Area of AL (% of the responses)				Type of farm according to the source of income			
	< 20	20-50	>50	average	a	b	c	average
Amount of tax is a large fiscal burden	64.4	34.6	10.5	36.5	58.2	15.3	26.5	33.3
Current system:								
does not present difficulties in calculating and collecting tax	88.9	92.3	96.3	92.2	53.1	15.3	24.5	31.0
shows no link between tax and income	97.7	84.6	92.6	91.6	55.1	12.2	25.5	31.0
treats farms unequally to entities involved in non-agricultural activity	76.0	69.2	37.0	60.7	44.9	7.1	16.3	22.8
restricts possibilities of using reliefs and exemptions	88.9	69.2	66.7	74.9	49.0	6.1	23.5	26.2
makes tax too much dependent on the economic situation	30.8	38.5	18.5	29.3	13.3	5.1	4.1	7.5

Key: (a) farms with income from agricultural activities only, (b) farms with income from agricultural activities and from retirement and disability pensions, (c) farms with income from agricultural and non-agricultural activities (contract work).

Source: own elaboration.

The studies also showed that the farmers were prepared for changes in the current tax system. They agree that the current system is a serious barrier to their sustainable development. However, a prerequisite to make changes in this system is the introduction of a series of tax reliefs and exemptions which would greatly improve its competitiveness. They believe that the lack of tax reliefs is the basic drawback of the current tax system in agriculture. More than 28% of the surveyed (classified by area and type of farm) opt for the introduction of the same reliefs as in case of personal income tax, which could mean that the farmers are familiar with the current rules for calculating taxes for other groups of taxpayers. Reliefs which the farmers would like to see in the new tax system include: the possibility of deducting social security contributions, investment relief, relief due to membership in a producer group and possibility of deducting the costs of advisory services and keeping the accounts while the most important would be: the possibility of deducting contributions (approx. 23% of the

respondents in both classification groups) and reliefs for advisory services (approx. 13% of the respondents in both classification groups).

More than ¼ of the surveyed think that the taxation base should be farm income, among them the largest response rate appeared on the farms of less than 20 ha of AL and on the farms with income from agricultural activity. In case of the larger farms, the number of followers is definitely lower. This confirms the common opinion that the structure of agricultural tax is the greatest burden for small-sized, economically weak farms, whose income is small or which even suffer losses. In the opinion of these farmers, the introduction of income tax could reduce their current tax burden or they would not pay tax.

Table 20. Assessment of the suggested changes in the tax system

Item	Area of AL (% of the responses)				Type of farm according to the source of income			
	< 20	20-50	>50	average	a	b	c	average
Income should be a tax base for the taxation of agricultural activity	41.8	15.3	22.4	26.5	46.9	8.2	22.4	25.8
Types of tax reliefs to be included in income tax:								
the same as in case of PIT	40.8	19.4	24.5	28.2	50.0	11.2	23.5	28.2
possibility of deducting social security contributions	37.8	21.4	9.2	22.8	43.9	5.1	15.3	21.4
investment relief	8.2	6.1	6.1	6.8	13.3	4.1	2.0	6.4
relief due to membership in a producer group	7.1	4.1	5.1	5.4	13.3	3.1	1.0	5.8
reliefs for advisory services	17.3	12.2	8.2	12.6	20.4	2.0	14.3	12.2
relief for costs of keeping tax books	5.1	8.2	3.1	5.4	10.2	2.0	5.1	5.7
Could low-income farms use the estimation method for determining income	42.9	26.5	23.5	30.9	53.1	12.2	24.5	29.9
Amount of income tax should account for:								
Below 5% of income	17.3	9.2	5.1	10.5	8.2	8.2	11.2	9.2
5-10% of income	8.2	9.2	11.2	9.5	26.5	6.1	10.2	14.3
10-20% of income	8.2	8.8	11.2	9.4	22.4	1.0	5.1	9.5
More than 20%	1.0	1.0	0	0.7	0	0	1.0	0.3

Key: (a) farms with income from agricultural activities only, (b) farms with income from agricultural activities and from retirement and disability pensions, (c) farms with income from agricultural and non-agricultural activities (contract work).

Source: own elaboration.

An attempt to estimate the limit of the farmers' tax sustainability showed that increase/introduction of income tax makes sense when the share of this tax in farm income will be below the level of 20% – according to 26.5% of the surveyed (by farm area) and to 23% of the respondents (by type of farm). This means that the farmers are willing to adopt new taxation rules, thus expanding

the tax base, only in case where the share of tax in farm income does not exceed 20%. It should be stressed that the current share of agricultural tax in agricultural income is about 2-6%. Only less than 1% of the surveyed farms are willing to pay a much greater proportion of their income to the tax system.

6. Social security systems in agriculture from the perspective of competitiveness – selected aspects

6.1. Social security – behavioural aspects

As in the case of economic insurance, when building the social security systems, particular attention is paid to two criteria: effectiveness and equality. The former refers to maximising total net benefits (i.e. benefits minus costs of activities, e.g. administrative). What is more, the effectiveness is determined also on a basis of preferences and ratings of system users. Therefore, the level (size) and the distribution of benefits and costs may vary substantially depending on the nature of the security system. The equality criterion refers generally to the fairness in the distribution of goods/resources and its impact on the consumption of goods and services.

From a theoretical point of view, effective policies should be pursued by considering ideal supply and demand models. Net benefits should be equally distributed, which results from the fact that the society perceives the aspect of equality positively (e.g. supporting low-income citizens by means of transfers, if they cannot afford to pay contributions reflecting the risk)¹⁴⁸.

H.C. Kunreuther et al. have suggested a number of guiding principles to create a framework for the development and evaluation of state strategies in the field of security. These rules may be divided into two categories:

1. Principles regarding information (so-called information principles) – strengthening the availability of risk data to implement an effective policy,
2. Rules regarding the design of the policy, taking into consideration the range and availability of data¹⁴⁹.

Table 21 presents the basic principles along with their short description.

¹⁴⁸ H.C. Kunreuther, M.V. Pauly, S. McMorrow, *Insurance & Behavioural Economics. Improving Decisions in the Most Misunderstood Industry*, Cambridge University Press, New York 2013, pp. 185-191.

¹⁴⁹ Ibidem, pp. 191-192.

Table 21. Guiding principles to assess the policy in the field of social security

Principle	Meaning
Information principle: „To make the precise risk assessment available to everyone”	When the amount of compensation is appropriately matched to the risk, this information may be helpful for those buying insurance policies.
Information principle: „To identify and manage relationships”	It is advisable to specify the essence of risk-related relationships which entail a negative risk and to deal with the so-called spillover effects. This results from the fact that the market does not cope well with the negative externalities.
Information principle: “To notice and customise strategies in terms of behavioural restrictions and heuristics”	Due to very simplified ways of decision-making (e.g., often according to the stereotypical belief “It will never happen to me”), the probability of events is underrated. In addition, there is some kind of myopia in relation to the assessment of effects of investment decisions.

Source: adaptation of considerations H.C. Kunreuther, M.V. Pauly, S. McMorrow, *Insurance & Behavioural Economics. Improving Decisions in the Most Misunderstood Industry*, Cambridge University Press, New York 2013.

A question about the scope of responsibility of the public sector in providing social security for citizens (including health care, retirement needs) arouses strong controversies in each state, regardless of the scale of interventionism. Generally speaking, the private insurance sector may generate socially undesirable results (even if there are no behavioural anomalies and those buying insurance policies maximise the expected utility). From the point of view of an insurance company, it is important to define the best price and the amount of compensation which maximises their expected profits.

In accordance with the principle of economic rationality, people belonging to low-income groups¹⁵⁰ should not pay social security contributions. The purchase of an insurance product by these groups, even that provided by the public sector, is not attractive given the limited level of remaining disposable income¹⁵¹. Another aspect here is also the level of risk aversion, as well as medical rescue usually available without restrictions (in life-threatening situations). The above-mentioned behaviour of low-income persons is not optimal from the point of view of the society, therefore, there is a demand for social benefits which are to some extent subsidised by the state.

¹⁵⁰ This may be applied to members of semi-subsistence family farms.

¹⁵¹ Here, we should refer to microeconomic universals – theory of consumer choice with the „budget constraint” category. R. Preston McAfee, T.R. Lewis, D. J. Dale, *Introduction to Economic Analysis*, Version 2.1, <http://www.muhlenberg.edu/media/contentassets/pdf/economicanalysis/IEA.pdf> (date of access: 26 November 2014).

The practice of social security systems is based on the theory of saving, explored by the economic psychology. Even the definition of saving in the economic theory is very ambiguous, as evidenced by various formulations by economists¹⁵². As noted by T. Zaleskiewicz, what connects the most popular models of saving (Duesenberry theory of relative income, Friedman theory of steady income, Modigliani and Brumberg life cycle theory), is “assumed rationality of behaviours of consumers who are geared towards maximising personal utility”¹⁵³. Given that it happens very often that theoretical assumptions are not met, it is worth paying attention to the behavioural life cycle theory by H. Shefrin and R. Thaler. The assumptions of the behavioural model, which refers to the theory of self-control and making decisions with delayed consequences are as follows¹⁵⁴:

- There are “self-control mechanisms” which protect against the greedy consumption, by allowing to strengthen the preparedness of postponing gratification in time;
- “bimodularity” of the human mind: the “maker” module – primary, affective, the “planner” module – rational, inducing to save;
- occurrence of mental accounting – the accounts system in the human mind (the account of current income, assets and future income);
- occurrence of the framing effect – the amount of money may be allocated to various mental accounts;

Over the last two decades, there has been a very rapid increase in the number of empirical studies on retirement behaviours (especially in the U.S., Canada and Western European countries)¹⁵⁵. The results of these studies may contribute to the reform of the existing social security system.

¹⁵² Development of the theory of income, including also the role of savings, was of evolutionary nature. The development of this theory was contributed to by F.P. Ramsay, J. M. Keynes, S. Kunetz, F. Modigliani, A. Ando, R. Brumberg. Cf. F. P. Ramsey, *A Mathematical Theory of Saving*, *The Economic Journal*, Vol. 38, No. 152 (Dec., 1928), <http://www.jstor.org/stable/2224098> (date of access: 27 November 2014), pp. 543-559; L.J. Kotlikoff, *Saving* [in:] *Concise Encyclopedia of Economics* (2nd ed.), coll. work ed. by D.R. Henderson, Library of Economics and Liberty, Indianapolis 2008;

¹⁵³ T. Zaleskiewicz, *Economic psychology*, Polish Scientific Publishers PWN, Warsaw 2011, p. 228.

¹⁵⁴ *Ibidem*, p. 235.

¹⁵⁵ Evolution with regard to modelling methods was related to the dissemination of estimation of structural parameters of dynamic behavioural models under conditions of uncertainty. As opposed to previously preferred static models, including lifetime models, dynamic models have the following advantage: they reflect the sequentiality of retirement processes in which decision makers adapt their behaviour in the course of events; Cf. W. van der Klaauw, K.I. Wolpin, *Social Security and the Retirement and Savings Behaviour of Low Income Households*, *Journal of Econometrics*, July, 145 (1-2), pp. 21–42.

W. van der Klaauw and K.I. Wolpin developed and estimated the model of retirement and savings containing a limited amount of loans, stochastic remuneration offers, status of health and ability to survive, social benefits¹⁵⁶, health insurance contributions and specific legacies¹⁵⁷. The model is estimated on a sample of relatively poor households from the first three phases of the Health and Retirement Study (HRS), for which social security income is of particular importance. The estimated model may be used to simulate a response to changes in the social security policy, including changes in the level of benefits, rates and limits concerning payroll taxes, social quasi-taxes, retirement age (earlier and “regular”). The model-related considerations refer to the impact of changes in the modelled variables on the welfare and budget.

The assumptions of the model regarding the decision-making problem of a single person or a married couple are as follows:

- optimisation problem, in accordance with the collection of data available for estimation, starts at the midpoint of the life cycle of a farm,
- as the initial conditions, those which took place at the midpoint of the life cycle of a farm, have been adopted,
- differentiation between objects was not considered until the moment of the final solution and estimation of the method.

The estimated model forecasts large and diversified reactions of behaviours of various groups of people. In case of reducing social benefits by 25%, there was a moderately large reduction in the supply of work for persons under 62 (2-3% for the married, 5-7% for singles), and also an increase in the number of annual hours of work for those aged 62-69 (respectively: 12 and 8%). The experiment results indicate that changes in the social security rules may lead to significant behavioural reactions in terms of work at low-income households. This may have, in turn, important financial consequences for the social security system. It also turns out that changes in employment, being a response to social policy tools, were accompanied by slight, but significant changes in the level of net assets of a household.

In turn, from the studies by J.B. Liebman and E.F.P. Luttmer it results that mild intervention (by sending an information brochure and inviting to a website, so-called web tutorial) caused the increased share in the labour market in the following year (by 4 pp., in relation to a reference group with an average of 74%). Apart from the impact on the current demand in the labour market, the

¹⁵⁶ In the Anglo-Saxon literature, there is a sort of differentiation between social security benefits and retirement pension.

¹⁵⁷ W. van der Klaauw, K.I. Wolpin, *Social Security...*, op.cit.

information intervention contributed to decisions on staying in the labour market longer. This applied particularly to female respondents¹⁵⁸.

The team of A. Kapteyn et al. carried out the studies in accordance with the trend of behavioural economics¹⁵⁹. Relatively recently, the studies have been undertaken on the framing effect in developing important decisions regarding retirement. The article shows that the individual objectives with regard to the retirement age are sensitive to the framing effect. From the experiment results it appears that the use of “break-even point analysis” may have a strong deterrent effect on earlier retirement decisions. What is more, women, people with credit card debt and employees with lower expected retirement benefits are more subject to the framing effect.

From the review of empirical work on the behavioural approach (formulation) in the practice of taxation, made by T.O. Weber, J. Fookien and B. Hermann, it results that behaviours of decision makers – natural persons, are affected not only by economic factors but also by many other factors related to the area of psychology, and even ethics¹⁶⁰.

Many studies apply to the problem of tax evasion by tax payers. This problem is dealt with, *inter alia*, by the team of T.O. Weber. At the core of their considerations, there is the neoclassical Allingham and Sandmo’s model of 1972 (so-called A-S model) relating to income tax evasion by tax payers. This model may be applied in analysing changes in behaviours of payers of social security contributions due to system reforms. The A-S model is based on the following assumptions¹⁶¹:

- taxpayers are homogeneous and act in accordance with the principles of economic rationality,
- taxpayers make a choice between the “safe portfolio” (by declaring properly actually gained tax income and, following this, by paying the legal amount of income tax) and the “risky portfolio” (by giving underestimated tax income, which has its consequences for the central budget),
- tax evasions are disclosed at the time of tax audit,

¹⁵⁸ Cf. J.B. Liebman, E.F.P. Luttmer, *Would People Behave Differently If They Better Understood Social Security? Evidence From a Field Experiment*, NBER Working Paper No. 17287 August 2011, Revised December 2011, <http://www.nber.org/papers/w17287.pdf> (date of access: 8 December 2014).

¹⁵⁹ J.R. Brown, A. Kapteyn, O.S. Mitchell, *Framing Effects and Expected Social Security Claiming Behaviour*, NBER Working Paper No. 17018, May 2011, <http://www.nber.org/papers/w17018> (date of access: 28 November 2014).

¹⁶⁰ T. O. Weber, J. Fookien, B. Herrmann, *Behavioural Economics and Taxation*, Taxation Papers, Working Paper N. 41, 2014.

¹⁶¹ M.G. Allingham, A. Sandmo, *Income tax evasion: a theoretical analysis*, „Journal of Public Economics”, Volume 1, Issues 3–4, November 1972, s. 323–338.

- it is possible to enrich the model with additional assumptions, *inter alia*, those related to the theory of expected utility¹⁶² or to formulate this model dynamically¹⁶³.

According to Weber et al., the extension of the neoclassical formulation involved taking into account the effects of social changes and abandoning the theory of utility. Empirical works published so far are based on the use of a diagnostic survey and on the increasingly used economic experiment. Many modern studies indicate that significant impact on fulfilling tax obligations by owners may be exerted by the following factors: standards, honesty or pressure.

In terms of the social security system reform, it is worth stressing that the results of the experiments related to the observance of tax law may also refer to testing theoretical models as well as reforming the existing administrative system, responsible for the tax burden. Changes in the existing social security system and, consequently, its competitiveness against a background of international law, should be based on¹⁶⁴:

- improving the “institutional quality” – increasing the motivation of farmers to pay timely retirement contributions and health insurance contributions;
- improving the confidence of tax payers to state institutions and administrative bodies (*inter alia*, KRUS/ZUS);
- promoting social norms (honesty, loyalty to the state, involvement in civil affairs, etc.).

Summing up, making the reform of the social security system, including for specific professional groups (e.g. farmers, uniformed services), must be based on solid methodological pillars. It is important to test reactions of individual persons (taking into account the solid achievements of economics and experimental finance) to suggested changes (e.g. raising the retirement age, increased retirement contribution, “tightening of the system”). The presented study results indicate that policymakers usually do not follow the principles of economic rationality, which translates into the situation in the labour market, the amount of additional income (in addition to received retirement pension).

¹⁶² J. Andreoni, B. Erard, J. Feinstein, *Tax Compliance*, „Journal of Economic Literature”, Vol. 36, No. 2, 1998, p. 818-860.

¹⁶³ E. Engel, J.R. Hines, *Understanding tax evasion dynamics*, NBER Working Paper Series, No. 6903, National Bureau of Economic Research, 1999.

¹⁶⁴ T.O. Weber, J. Fookien, B. Herrmann, *Behavioural Economics...*, op. cit.

6.2. Social security in the selected non-EU countries (U.S., Canada) – overview of the solutions

The development of social security systems is a resultant of various types of determinants. An important role is played by the political system and, following this, the preferences of a given state with regard to developing the economic and social policy. When analysing social security systems in various states, it may be noted that there has been a departure from the traditional Bismarck and Beveridge models in their pure form. Dominant (as also evidenced by the further analysed examples of the U.S. and Canada) are the “hybrid”, mixed solutions, combining the components of the Beveridge model (with minimum retirement pension financed by the tax burden), public pay-as-go system and optional saving opportunities.

The American social security system is characterised by the fact that there are no preferences towards specific professional groups, although it is characterised by a significant degree of complexity. Compared to the continental systems, the American social security system is based, to a significant extent, on the Beveridge model¹⁶⁵. P. Krugman and R. Wells explain that the tax system (supplying, to a large extent, the social security system in the U.S.) is relatively complex, because “taxes are collected at the national level by the federal government, and at the local level by counties, cities and towns”¹⁶⁶. The federal level includes income taxes, corporate taxes, quasi-taxes (including social security contributions). At the local level, the situation is more complicated, because it also includes sale (turnover) taxes, property taxes, as well as various sorts of charges. Currently, the social security system in the U.S. is based on three pillars which is shown in Table 22.

Table 22. Components of the social security system

Component	Item
Social security	Guaranteed income for old age persons, disabled children of deceased beneficiaries,
Medicare	Covering costs of treatment for US citizens aged 65+
Medicaid	Covering most costs of treatment for low-income US citizens

Source: adaptation of considerations P. Krugman, R. Wells, *Macroeconomics*, Polish Scientific Publishers PWN, Warsaw 2012, p. 353.

¹⁶⁵ Cf. original text of the so-called Beveridge report from 1942: Social Insurance and Allied Services, Report by Sir William Beveridge Presented to Parliament by Command of His Majesty November 1942, <http://www.fordham.edu/halsall/mod/1942beveridge.html> (date of access: 26 November 2014); B. Abel-Smith, *The Beveridge Report: Its origins and outcomes*, “International Social Security Review”, 45, pp. 5-16.

¹⁶⁶ P. Krugman, R. Wells, *Macroeconomics*, Polish Scientific Publishers PWN, Warsaw 2012, pp. 353.

Table 23 shows the basic elements of the retirement system in the United States along with their short characteristics. Its analysis shows that the solutions with regard to the retirement system are hybrid – combining the elements of the Beveridge model and Bismarck model, including also a connection (optional) with financial markets.

Table 23. Principles of the retirement system in the U.S.

Component	Item
Pay-As-Go-Financing (1939)	Partial pay-as-go nature (especially after the reform of 1983), with partial supplying from the central budget. An important role is played by the accumulation of the revenue surplus.
Supplemental Security Income (1972)	This is not social security in conventional terms, first of all, the programme to improve welfare, whose goal is to provide security at the the federal level.
Structure of benefits	<p>Average indexed monthly earnings (AIME), which relate to individual average earnings obtained for a period of 35 years during which an employee earned the highest salaries.</p> <p>The next step is to determine so-called primary insurance amount (PIA), paid to an employee who has reached the retirement age (in a normal mode) or has been disabled. The amount should be treated as annuity payment (indexed by the inflation rate, the CPI). Calculation of PIA:</p> <ul style="list-style-type: none"> (a) 90% of the first USD 826 of AIME; (b) 32% of AIME above USD 826-4,980 of AIME; (c) 15% of AIME above USD 4,980. <p>In general, the relationship was as follows: the higher are AIME, the lower is the share of expected retirement pension in the salary.</p>
Retirement age	From 1937, reaching the age of 65 was associated with reaching the retirement pension rights. For people born after 1959, the retirement age is 67. There is a possibility of receiving reduced retirement pension at the age of 62.
Status of the beneficiary's family	A dependent spouse or a child of a beneficiary receives the benefit in the amount of 50% of PIA. This also applies to a situation after the death of a person entitled to receive PIA.
„Earnings test” and taxation of retirement pension	<p>Benefits of persons who have not reached the age entitling them to receive retirement pension, shall be reduced from USD 1 per USD 2 of earnings above USD 14,160 (indexed every year by the average wage growth). People who have lost their benefits as a result of “earnings test”, receive higher retirement pension when they reach their retirement age.</p> <p>Taxation: up to 85% of income from retirement pension (above the base amount – USD 25,000 for single taxpayers, USD 32,000 for married couples) are subject to taxation (federal income tax).</p>
Method for financing retirement pension	Social Security is financed form payroll tax constituting a fixed proportion (in percentage terms) of annual gross earnings up to a certain amount. This tax is paid (in equal shares of 50%) by an employer and an employee. In practice, this happens very rarely. In addition, there is also additional payroll tax (financing health insurance) – amounting to 1.45%, levied both on an employer and an employee.

Source: adaptation of considerations H. S. Rosen, T. Gayer, *Public Finance*, McGraw Hill, New York 2010; *Social Security, Primary Insurance Amount*, <http://www.ssa.gov/oact/cola/piaformula.html> (date of access: 28 November 2014).

In turn, Table 24 summarises the rates and limits for benefits under the social policy in the U.S. The total amount of liabilities to the Social Security

Programme is 30.6%, whereby both employees and employers pay half. The maximum annual limit of earnings from which the insured are obliged to pay social security contributions is USD 117,000, while there are no restrictions for health insurance. In the US, the retirement age is 66, and the maximum monthly retirement pension in 2014 was USD 2,642.

Table 24. OASDI and SSI Programme – rates and limits for 2014.

Item	Rate/limit
Social Security (OASDI) Programme	
Social Security	
Social Security (Old-Aged, Survivors, and Disability Insurance) employer and employee, each	6.20
Medicare (Hospital Insurance) – health insurance employer and employee, each ^{a,b}	1.45
Maximum Taxable Earnings [%]	
Social Security [USD]	117, 000
Medicare (Hospital Insurance)	No limit
Earnings Test, Annual Exempt Amount (USD)	
Below the full retirement age for the entire year	15, 480
For a month before reaching the full retirement age in the given year	41, 400
Maximum monthly benefits for employees of retirement age [USD]	2, 642
Retirement age	66
Supplemental Security Income (SSI) Programme	
Monthly Federal Payment Standard [USD]	
Single	721
Married couples	1, 082

Explanations: ^a self-employed persons pay in total 15.3% — 12.4% for OASDI and 2.9% for Medicare; ^b this rate does not reflect additional 0.9% of the Medicare parafiscal charge, to be paid by certain taxpayers earning high income.

Source: *Social Security, OASDI and SSI Programme Rates & Limits, 2014*

http://www.socialsecurity.gov/policy/docs/quickfacts/prog_highlights/RatesLimits2014.html (date of access: 28 November 2014).

The solutions adopted in the Canadian social security system result from the approach of the socio-economic safety net¹⁶⁷. Due to the federation system, quite clear is the division of responsibilities among the administrations of the individual provinces (particularly visible in the French-speaking units, located in the western part of Canada). Special interest in the course of the discussion on the reform of the “general” retirement system in Poland is raised by the Canadian solutions, including so-called general state pension (as part of Old Age Security), financed by income taxes. As noted by S. Pieńkowska, the first two

¹⁶⁷ Cf. Ch. Berent, *Holes in the safety net? Social security and the alleviation of poverty in a comparative perspective*, The Year 2000 International Research Conference on Social Security Helsinki, 25-27 September 2000 “Social security in the global village”, International Social Security Association (ISSA) Research Programme; D. Raphael, *Addressing the social determinants of health in Canada: bridging the gap between research findings and public policy*, “Policy Options”, March 2003, pp. 35-40.

pillars of the Canadian retirement system are typically public, while the third pillar, based on the principle of voluntary participation, is associated with the private sector (Table 25)¹⁶⁸. The administration authority, responsible for handling benefits under retirement security, as well as other income redistribution instruments is the equivalent of the Social Insurance Institution (ZUS) – Service Canada, established in 2005 and subordinate to the Human Resources and Skill Development Canada¹⁶⁹.

Table 25. Structure of the Canadian pension system

Public system	OBLIGATORY	
	I pillar	Non-contributory, welfare system (Old Age Security)
	II pillar	Contributory, security system (Canadian Pension Plan/Quebec Pension Plan)
Private system	VOLUNTARY	
	III pillar	Corporate retirement pension schemes
		Registered Retirement Pension Plans Pooled Registered Pension Plans

Source: S. Pieńkowska, *Canadian system of pension insurance*, „Social Policy” 2005, No 10, p. 19.

As it results from Table 26, benefits under the public system which are welfare benefits, are to ensure the minimum subsistence level for citizens. It is worth noting that the amount of the GIS supplement as well as of the OAS Allowance and OAS Allowance for Survivors depends on the marital status of a potential beneficiary and on gained tax income.

¹⁶⁸ S. Pieńkowska, *Canadian system of pension insurance*, „Social Policy” 2005, No. 10, pp. 18-22.

¹⁶⁹ B. Kłos, *Canadian pension system*, BAS Analyses, No. 16(83), 19 October 2012, [http://orka.sejm.gov.pl/WydBAS.nsf/0/23E2E00519A32391C1257A9F0030279D/\\$file/Analiza_BA_S_2012_83.pdf](http://orka.sejm.gov.pl/WydBAS.nsf/0/23E2E00519A32391C1257A9F0030279D/$file/Analiza_BA_S_2012_83.pdf) (date of access: 7 December 2014).

Table 26. Benefits as part of Old Age Security

Type of benefit	Conditions to grant benefit	Method for calculating the amount	Amount of benefit
OAS retirement pension	<p>For Canadian residents:</p> <ul style="list-style-type: none"> 65 years of age, Canadian citizenship or legal status of the resident (legal residence), at least 10 years of residence (after the age of 18). <p>For Canadians outside the country:</p> <ul style="list-style-type: none"> 65 years of age, Canadian citizenship or legal status of the resident (legal residence) on the day before leaving Canada, at least 20 years of residence in Canada (after the age of 18). 	<p>Partial retirement pension is calculated on a basis of 1/40 of full retirement pension for each full year of residence in Canada after the age of 18. The minimum period of residence in Canada when you should apply for partial OAS retirement pension is 10 years after the age of 18 (provided that you reside in Canada at the time of receiving retirement pension).</p>	<p>For the period from 1 October to 31 December, the maximum amount of retirement pension was CAD 563.74 (per month). The amount of OAS retirement pension is indexed on a quarterly basis, in accordance with CPI.</p>
Guaranteed Income Supplement (GIS)	<ul style="list-style-type: none"> At least 10 years of residence in Canada, receiving guaranteed state pension, Earned income is lower than maximum annual income. 	<p>Amount of the supplement depends on the marital status of a beneficiary, and also on income from the previous fiscal year (or pooled income, together with a partner or spouse). The following should be taken into account: (1) benefits from the Canada Pension Plan (CPP)/Quebec Pension Plan (QPP), other retirement pension income, benefits under Registered Retirement Savings Plans (RRSPs), interest and other income from investments, capital gains and dividends obtained in Canada, net income from real estate rental, income from earnings (minus CPP/QPP contributions), with the tax-free amount of CAD 3,500, union dues and RRSP contributions are also deducted.</p>	<p>For the period from 1 October to 31 December, the maximum amount of GIS was CAD 764.40 (per month).</p>

Table 26 cont.

OAS Allowance as well as OAS Allowance for Survivors	<p>OAS Allowance:</p> <ul style="list-style-type: none"> • age 60-64 • spouse or partner receives OAS retirement pensions • being a citizen or permanent resident, • residence in Canada for at least 10 years (after the age of 18), • annual income (or pooled income combined, together with a spouse/partner) is lower than maximum annual income <p>OAS Allowance for Survivors:</p> <ul style="list-style-type: none"> • conditions as above, in addition: partner or spouse died, and a person applying for allowance has not entered into a new relationship 	Amount of the allowance depends on the marital status of a beneficiary, and also on income from the previous fiscal year.	For the period from 1 October to 31 December, the maximum amount of OAS Allowance amounted to CAD 1,070.60 (per month) - in case where a spouse receives GIS allowance and OAS retirement pension in full amount; Allowance for Survivors was up to CAD 1,198.58
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Source: own elaboration based on: Service Canada, Old Age Security, <http://www.servicecanada.gc.ca/eng/services/pensions/oas/index.shtml> (date of access: 7 December 2014).

Apart from few exceptions, any person over 18, who works in Canada (except the province of Quebec¹⁷⁰) and earns more than CAD 3,500 a year, must, until the age of 70, pay contributions under the contributory security system (Canadian Pension Plan, CPP). Similarly, as in case of European security systems, half of the contribution is paid by an employer (self-employed persons are obliged to pay the whole amount). Table 27 shows (including a brief characteristics) benefits functioning under the CPP contributory system.

¹⁷⁰ It has a separate, although similar to federal Canadian solutions, Quebec Pension Plan (QPP).

Table 27. Benefits as part of Canada Pension Plan

Type of benefit	Conditions to grant benefit	Method for calculating the amount	Amount of benefit
Retirement Pension	<ul style="list-style-type: none"> Reaching the retirement age (65 years or more, it is possible to start paying retirement pension earlier or later); Appropriate contributory period as well as the sum of accumulated contributions. 	Amount of the benefit depends on the contributory period, and also the sum of accumulated CPP contributions.	Average amount for new beneficiaries (July 2014) – CAD 607.33; the maximum amount of retirement pension CAD 1,038.33
Post-Retirement Benefit	<ul style="list-style-type: none"> Age: 60-70 years. Employment, and, at the same time, paying CPP contributions. Obtaining contributory CPP (or QPP) retirement pension. 	Amount of the post-retirement benefit depends on the level of current earnings, amount of CPP contributions (for the previous year), as well as the age of a potential beneficiary.	The maximum amount of PRB – 1/40 of CPP retirement pension (on average, CAD 9.55, up to CAD 25.96 – data for July 2014)
Disability Benefit	<ul style="list-style-type: none"> Severe and long-lasting disability Age under 65 Meeting other criteria for CPP (possibility of obtaining retirement pension under the contributory system) 	Overall assessment of the degree of disability.	Average amount of the disability benefit CAD 901.40, up to CAD 1,236.35 – data for July 2014.
Benefits after a death	One-time lump-sum payment to heirs of the deceased. At least 3-year CPP contributory period.	Amount of the benefit depends on the duration of the contributory period and the total of contributions paid by the deceased.	From CAD 2,294.07 to CAD 2,500.00

Source: own elaboration based on: Service Canada, *Contributions to the Canada Pension Plan*, <http://www.servicecanada.gc.ca/eng/services/pensions/cpp/contributions/index.shtml> (date of access: 7 December 2014).

Summing up, as shown by the Canadian and American experiences, the social security system of each country is a resultant of the population's expectations with regard to meeting the needs of social security, budgetary restrictions, as well as political factors although related to political economics. Historical tradition, related to the idea of the "welfare state" also plays an important role. In general, the solutions adopted in both analysed North American countries are based on a combination of the welfare and contributory system, while featuring strongly the need to invest savings in financial markets. These systems may be an indication for developing the Polish social security system.

6.3. Innovation as a determinant of competitiveness of social security¹⁷¹

The social security system under the sector of public finance is not geared towards the correction of anomalies on the part of both the supply and demand. The main premise to justify the functioning of public systems (or, partially, only their pillars) is the widely interpreted policy of welfare state, stressing the social concern about the redistribution of income. This has been stressed particularly in health (medical) insurance functioning in the United States (Medicare). It should be noted that the financing of guaranteed basic pension under Old Age Security (welfare system) functioning, e.g. in Canada, reflects the opinion that the obligatory financing of social benefits is a fundamental method to correct anomalies on the part of the supply. There is also a belief that public management of administration which implements the social policy objectives is a guarantee of benefits with higher returns and better protection against the risk, rather than those implemented by private sector entities. The benefits resulting from providing social security and health insurance services by the public sector are a consequence of economies of scale as well as the use of the fiscal revenues to ensure the balance of the social security system¹⁷².

In the most famous Esping-Andersen classification, the North American social security systems presented in Chapter 6.2 are included into systems where the private sector provides retirement pension on market conditions, while the public social security system is very limited¹⁷³. The Beveridge model, present there to a lesser or greater extent and justifying the need to pay benefits financed by the fiscal revenues is related to contribution solutions and voluntary private savings systems.

Experiences from the United States indicate that safety and comfort of life-long guaranteed income as part of retirement pension may sometimes disappear. Future retirement pensions under individual retirement accounts

¹⁷¹ Innovation has a very wide innovative range and refers to various economic systems and structures (e.g. enterprises) or socio-economic ones (e.g. local government units). In case of evaluating the effectiveness of tax systems or social security systems, we should take into account the criteria from the point of view of the state as well as of beneficiaries (enterprises, citizens – taxpayers/contributors). Innovation of social security system corresponds to the idea of social innovations.; Cf. J.A. Jr. Phills, K. Deiglmeier, D.T. Miller, *Rediscovering Social Innovation*, „Stanford Social Innovation Review”, Fall 2008, http://www.ssireview.org/articles/entry/rediscovering_social_innovation/ (date of access: 21 December 2014); J. Howaldt, M. Schwarz, *Social Innovation: Concepts, research fields and international trends*, IMO International Monitoring, 2010, http://www.internationalmonitoring.com/fileadmin/Downloads/Trendstudien/IMO%20Trends_tudie_Howaldt_englisch_Final%20ds.pdf (date of access: 21 December 2014).

¹⁷² Cf. H.C. Kunreuther, M.V. Pauly, S. McMorrow, *Insurance...* op. cit., pp. 265-266.

¹⁷³ Cf. G. Esping-Andersen, *The Three Worlds of Welfare Capitalism*, Cambridge: Polity Press & Princeton: Princeton University Press, 1990.

(IRA) are based on the great flexibility. This enables, to a certain extent, optimisation decisions related to the development of the amount of total benefits (including those provided by traditional social policy channels). In fact, future pensioners using various savings plans, offered by financial institutions, receive many tax preferences¹⁷⁴.

Insurance innovations include products offered by the private sector, *inter alia*, long-term care insurance (LTC/LTCI), complementing Medicare or Medicaid. The plan is to provide the insured (under certain conditions) with long-term care (at home, stay at a hospice, at a nursing home or support related to Alzheimer's disease). LTC/LTCI insurance covers also the costs of a female/male nurse as well as social worker. In the U.S., two types of LTC insurance are offered, namely: (1) "tax qualified" (TQ) – benefits paid to people requiring care for a minimum 90 days and unable to perform 2 or more daily activities; (2) "non-tax qualified" (NTQ) – a factor initiating this policy is a common diagnosis of a disease by a physician of the insured person and an insurance company employee. However, benefits in a form of nursing or care services are not treated in a tax preferential manner. Due to the rapid aging of the American society (mass aging – term introduced by Y-P. Chen¹⁷⁵), also in rural areas, there is an increasing interest in this type of insurance products, whose scope exceeds standard health insurance. The amount of the LTC/LTCI contribution depends on several determinants, i.e. (1) the age of the insured, (2) duration of paying contributions, (3) protection against inflation, (4) health status (preferred, average, below average).

With a view to modernisation of the agricultural social security system in Poland, it should not be forgotten that relatively low (when compared to the general public) security contributions determine low labour costs in the agricultural sector and, consequently, are one of the leading competitive advantages of Polish agriculture (against a background of the Western European countries). Important is the ability to reform (or rather to accommodate/adapt to) the rate of demographic and economic changes, taking account of the fact that free labour resources accumulated in rural areas are "released" mainly to the services sector in cities and suburban areas. Given the adverse (in terms of the effectiveness of retirement systems) demographic processes, it is important to

¹⁷⁴ J. Mahaney, *Innovative Strategies to Help Maximize Social Security Benefits*, Prudential, 2012, <http://research.prudential.com/documents/rp/InnovativeSocialSecurityNov2012.pdf> (date of access: 8 December 2014).

¹⁷⁵ Cf. Y-P. Chen, *Funding long-term care in the United States: The role of private insurance*, The Geneva Papers on Risk and Insurance, 2001, 26(4), s. 656-666; Y-P Chen, *Funding long-term care: Applications of the trade-off principle in both public and private sectors*, Journal of Aging and Health, February 2003, 15(1), pp. 15-44.

consider tax incentives or other social policy instruments to improve the birth rate. In the current conditions (preferential tax system for the agricultural sector), it is not possible to shift to the welfare state model (of Scandinavian type), which is characterised by very high rates of personal income tax. Although the Scandinavian model is very effective in the fight against income-based inequalities, and also performs a redistribution role well, its presence in some countries results from a sort of fixed traditions (e.g. the functioning of the social democratic parties since the 20s/30s of the 20th century.)¹⁷⁶.

From the point of view of maintaining the good condition of the sector of public finance (its sustainability also in the long term), it is also necessary to take account of changes in social expenses and the rate of social development. There is also a need to define what is and what should be the sustainable financing of the public sector. This problem applies to determining by means of which instruments the sustainable financing of the “welfare state” should be supported. There is also a need to identify how and to what extent “exogenous shocks” affect states supporting the social sphere. It is also necessary to look closer at tax bases, as well as to reduce the excessive number of exemptions, tax reliefs and other loopholes¹⁷⁷.

In conclusion, innovation in the field of social security systems must be considered in terms of the fiscal sustainability (macro level), balance in the labour market, social welfare, as well as maximising the expected utility (micro level). It results from that that the measurement and assessment of innovation of social security systems is incredibly complicated and must be based on solid methodological grounds, taken from various subdisciplines/scientific areas (*inter alia*, public finance, public sector economics, development economics, microeconomic fundamentals of risk theory). It is worth stressing that innovation considered here is a relative category (in international terms), after all, some social policy solutions/tools are adapted to states where they have not been used so far.

¹⁷⁶ Cf. S. Kuhnle, *International modelling in the making of the Nordic social security systems*, [in:] *Beyond Welfare State Models: Transnational Historical Perspectives on Social Policy*, coll. work ed. by P. Kettunen and K. Petersen, Edward Elgar Publishing, Cheltenham/Northampton 2011, pp. 76-78.

¹⁷⁷ B. Greve, *Financing the Welfare States – Changes and Challenges* [in:], *Innovation in Social Services: The Public-Private Mix in Service Provision, Fiscal Policy and Employment*, coll. work ed. by T. Sirovátka and B. Greve, Ashgate, Farnham/Burlington 2014, pp. 56-77.

Summary

The category the competitiveness of tax systems and of social security in relation to individual countries is incredibly complex, therefore, its evaluation in international terms involves the adoption of numerous simplifications related to the evaluation of the criteria of fairness, redistribution, effectiveness (output-input ratio) or administrative functionality¹⁷⁸. Thus, it may be necessary to make an evaluation using a bundle of indicators/indices, both from the perspective of the state and of taxpayers (or groups of taxpayers, as in case of farmers). From the point of view of tax recording and reporting, it is necessary not only to determine the amount of the rate but also to determine the method for determining tax income. Assuming that the trend from which there is no escape, will be the covering of commodity farms with income tax (when meeting certain criteria, e.g. the value of the commodity production above the fixed limit), more empirical studies are needed regarding the impact of the tax burden on farmers' tax income established in different manners.

Although financial accounting, along with the primacy of the accrual basis, applicable particularly in drawing up a balance sheet and a profit and loss account of an enterprise, will never be identical to tax solutions, still, at the application level we may look for tools supporting tax recording and reporting geared towards both above-mentioned objectives. The presented examples from the non-European countries indicate the great importance of the correct stock recording in determining the amount of farm income. In fact, the greatest difficulty in implementing innovative tax solutions, covering Polish farmers, may be a necessity to keep regular records for the purposes of tax reporting. Poland is an example of a state in which only a negligible part of farms are required to prepare financial statements. This applies mainly to large-scale entities with legal personality¹⁷⁹.

An improvement in the competitive position of the tax system covering farms will be determined by many interrelated quality factors. An important role may be played by the improved education and financial awareness of farmers, related to emphasising the role of financial information generated under the financial system of a farm. For this purpose, more or less formalised projects,

¹⁷⁸ M. Myrsky, *What does a Good Tax System Require?* http://www.djoef-forlag.dk/sites/ntj/files/2012/2012_10.pdf (date of access: 30 December 2014); OECD, Centre for Tax Policy and Administration, *GAP001 Principles of Good Tax Administration – Practice Note*, 1999 (<http://www.oecd.org/tax/administration/1907918.pdf>, date of access: 30 December 2014).

¹⁷⁹ Cf. W. Dzun, *Structural Changes in the Agricultural Holdings of Legal Persons during the Pre- and Post-Accession Period (1996-2010)*, *Issues of Agricultural Economics*, No. 3/2014, pp. 20-44.

undertaken jointly by agricultural advisory centres, research institutes and universities, may be used.

It should also be stressed that the category of income – as the economic surplus – is essential to design more complex risk management systems (e.g. taking account of insurance of revenues, or, in the longer term, of agricultural income in the fashion of certain solutions which are already in place e.g. in, Canada). However, time series covering at least a few years (e.g. 5 years) are required. Thanks to this, it will be possible to specify, in percentage terms, a decrease in income in relation to the several-year average.

The accuracy, clarity and unambiguity of the regulations defining the method for determining tax income significantly determine the level of transactional costs (at the level of farms), as well as administrative and operational costs (at the level of state bodies). The organised system of tax law – on one hand – prevents the emergence of tax fraud, on the other hand – reduces possibilities of using various tax management techniques, which affects the competitiveness of this system.

An improvement in the competitiveness of the Polish agricultural sector will involve a number of quality transformations, including the dissemination of computer-based agricultural accounting systems. Such tools, combined with support on the part of agricultural advisors, could facilitate the determination of income for tax purposes (including planned income tax from agricultural activity), as well as for purposes related to management processes of financial resources.

The small financial burden and, above all, the fact that it is not much felt in current financing decisions are an essential element conducive to achieving competitive advantages by Polish farms at the national or Community level. What is more, the small burden for farms in relation to gained income may significantly improve the competitiveness of farms at the sectoral level. However, it must be noted that agricultural tax gives privileges to stronger, larger farms, and thus becomes an ineffective instrument for developing the competitiveness within the agricultural sector. Thus, this situation demands making changes in the taxation system of farms.

In the opinion of the farmers, the main reason for the different conditions of running agricultural activities in Poland and other EU Member States, and thus the international competitiveness of farms, is the diversified level of subsidies to production and the fact that EU farms are better equipped with means of production. Farmers believe that these elements affect significantly the improved competitiveness of farms. From their opinions it results that the strengthening of the competitiveness of Polish agriculture may also be

contributed by changes in the tax system for farmers, which include: adoption of income as a tax base of agricultural activity, introduction of tax reliefs and exemptions into the system, low burdening of income with the tax rate at the level of about 10%, optional introduction of the estimation method for determining income in the smallest and economically weakest farms.

The solutions adopted under the agricultural social security system, and in the taxation of this professional group, determine relatively low labour costs in the agricultural sector (in international terms, particularly against a background of the Western European countries). The preferential treatment, as expressed by the low level of the fiscal and parafiscal burden (mainly KRUS contributions), determines the competitive position of the agricultural sector and, consequently, of the food industry. So far, the adopted solutions are subject to criticism, especially in the context of questioning classic principles underlying the creation of the tax and social security system (mainly the principles of fairness, including equality).

The potential agricultural social security system reform should be based on experiences of states in which there were preferential solutions for this social group. Changes in the agricultural social security system may have their implications in the level of economic security of the rural population and also affect the supply of public goods by farms. For this reason, any moves in institutional terms must be preceded by in-depth studies, including testing the reaction of individual entities to quantity (e.g. increased social security rate) or quality changes.

Analyses allowed to separate the factors affecting the competitiveness of tax and social security systems. Among them, the following should be mentioned: the level and amount of the financial burden, nature of tax reliefs and exemptions, method for determining agricultural income, tax reliefs and exemptions, spread between tax income and financial income, applied method for calculating tax income, innovative solutions introduced into systems, tax and insurance education of farmers in the context of using accounting data to manage farms, transparent and uncomplicated methods for determining farm income or clarity and unambiguity of tax regulations. A combination of all these components may effectively affect the increase in the competitiveness of the Polish tax and social security system in agriculture, not only at the national but also at the international level.

It is not possible to create an “ideal” social security system which could be adapted to most states. Differences in political conditions (e.g., the impact of the federal system, visible in the U.S. and Canada), macro-economic conditions (*inter alia*, related to the unemployment rate, GDP growth, inflation/deflation

processes, degree of “openness” of the economy of a given country, level of deficit and public debt) are the reason for which policymakers should create solutions “matched” to the specific nature of the economic and social situation in a given country. The axes of the social security reform are, firstly, socio-demographic changes affecting also the rural population, secondly, “fiscal sustainability”, associated with the level of expenses for the functioning of the social security system. This means that matching the agricultural social security system to a kind of the “socio-fiscal matrix” will be a long-term and multistage process, often based on estimates. Therefore, it is essential to precede the agricultural social security reform with the obligation of the simplified recording and reporting of farm income.

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