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Miscellanea

MICHAŁ SOLIWODA

Institute of Agricultural and Food Economics
– National Research Institute
Warsaw

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DILEMMAS IN A FINANCIAL DIMENSION OF SUSTAINABILITY OF FARMS

Summary

Sustainability, as a specific inter- or even transdisciplinary “metacategory”, refers also to monetary processes. So far, a financial approach of sustainability of farms has not been explored. The aim of this paper was to highlight some theoretical and methodological issues related to a financial dimension of sustainability of farms. The research objectives were as follows: (1) to link achievements in the area with theoretical and methodological apparatus for sustainable growth (in financial terms) of farms to concepts of sustainability, (2) to identify associations between the sustainable growth and selected agricultural farm management problems and agrarian policy. Relying on agricultural income category (including net farm income), excluding the farm’s financial situation, leads to a significant simplification that may deform an analytical framework for sustainability. The terms “sustainable growth”, “sustainable growth rate”, “sustainable intensification” may extend the current framework for analysing the sustainability of farms, as well as be a prerequisite for constructing/improving instruments that may support farm management, or monitoring and evaluation of the effects of agricultural policy.

Key words: sustainability, sustainable growth, agricultural finance, methodology of finance, farm

Introduction

A terminological “matrix”, and its methodological instruments concerning growth and development of agriculture sector entities, forms a “level” parallel to the research issue of sustainability of farms and sustainable development of agriculture¹. Financial approach to sustainability of farms is not explored, which inclines to start theoretical and methodological discussions in the field.

The aim of this paper was to highlight some theoretical and methodological issues related to a financial dimension of sustainability of farms. The research objectives were as follows: (1) to link achievements in the area with theoretical and methodological apparatus for sustainable growth (in financial terms) of farms to concepts of sustainability, (2) to identify associations between the sustainable growth and selected agricultural farm management problems and agrarian policy. The paper provides an opportunity to carry out an in-depth empirical research on the sustainable growth of farms, in particular to identify interdependencies between the aforementioned category and security and financial stability. At the end of the paper, there are conclusions and recommendations.

Financial level of sustainability of economic operators

Sustainability – as a specific inter- or even transdisciplinary “metacategory”² – refers also to monetary processes. Moreover it is necessary to refer to the definition of “sustainability” usually linked to economic activity (see business sustainability). Terminological problems can follow from (Financial Times 2014):

- the need to highlight the processes of managing financial, social and environmental risk categories (i.e. focusing activity on profits – people – planet, 3P) – this approach is, however, criticised because it does not consider the time factor and it is based on traditional categories developed by business reporting practice, including accounting (Scerri A., James P. 2010);
- “elasticities” of an economic operator in dynamic terms – economic operators are able to survive shocks and crises because they are connected to “healthy” economic (including financial), social and environmental systems.

As results from the above, prospective thinking is important, which involves the need to satisfy the needs of future generations. Sustainability of economic operators entails meeting, simultaneously, the following criteria (Financial Times 2014): (i) economic efficiency (areas of innovation, well-being, productivity);

¹ The microeconomic approach, mainly concerning private sector enterprises, is characterised by numerous ambiguities in definition and methodological gaps (see Zhou H., Wit G. de 2009). This contrasts with the multitude of theoretical concepts drawn up at the macro level (identification of the reasons for economic growth, formulation of theories describing the category), starting from classical ones, such as: A. Smith, D. Ricardo, Th. Malthus, J.S. Mill, and Marxist and heterodox ones, e.g. J.S. Schumpeter.

² R.W. Kates et al. (2000, p. 1) even claim that it is possible to separate sustainability science focused on “dynamic interactions between the natural environment and the society”. This statement is open to polemics.

(ii) social equity (sensitivity to poverty, local communities, well-being, respect for human rights), and (iii) care for the environment (e.g. climate change, land use, biodiversity).

In his *opus magnum* J.S. Zegar (2012, p. 88) states that with reference to agriculture sustainability “can be considered at various levels, starting from a specific field, crop or other agricultural activity, through a farm, and local, regional and national level, and ending with the continental and global level”. The most significant methodical progress was noted for quantification of sustainability of farms. There already is an extended set of sustainability indices concerning sozological criteria (referring to a farm³), economic criteria (mainly based on net farm income) and social criteria.

The increasingly more noticeable and explored issue of financial imbalance, connected with financial growth and development at various levels, constitutes a specific link between the broadly-conceived concepts of sustainability and the theory of finances. The concept of “metafinance” is at the top of the pyramid representing the original concept of classifying areas of finances by “level of institutional analysis”, authored by J.K. Solarz (2012, pp. 7-8). This part of the finance theory concerns architecture in the financing system. It takes as the focus of its analysis the phenomenon of imbalance. The concept of “macrofinance”, concentrated around the analysis of public goods, considers the “durability of economic growth” and “sustainable financial markets”. According to J.K. Solarz, institutional analysis can reach even the human psyche, thus, helping to recognise, e.g., motives for saving money by household members. J.K. Solarz opts for introduction of a new area of financial research, i.e. “nanofinance”, because of his critical opinion on the research methods formerly leading in economic sciences. As J.K. Solarz (2012, p. 10) rightly states “guaranteeing households access to professional financial risk management” will precondition “sustainable economic growth”. Moreover, A. Wojtyna (2011), trying to find an answer to the question: why the mainstream economy was not able to predict the global crisis (2007+), states that as a result of this “failure” other disciplines of the economic sciences might be gradually included into the mainstream. Comparative studies, whose development stems from megatrends in the world economy, can become a research approach enabling precise analysis of sustainability of farms in the financial dimension (Flejterski p. 2015).

In conclusion, sustainability – as derivative category of sustainable development – covers economic, ecological and environmental aspects. The significance of the financial dimension of sustainability, which currently undergoes integration with the economic factors (i.e. some financial measures and indices form a kind of subset illustrating economic sustainability), will be increasingly

³ Numerous environmental sustainability indices were presented in the works of: Baum R. 2008; Wrzaszcz W. 2012, Wrzaszcz W. 2013, Zrównoważenie... 2013.

more important when finances are separated as an autonomous discipline of science and ties between farms and financial infrastructure get stronger. This can be fostered by dissemination of IT decision support systems in the Polish agriculture, primarily promotion of even the simplified accounting records, followed by financial reporting.

Paradigm of sustainable growth for farms

Business growth is, today, one of the most interesting areas of economic research, which as such requires interdisciplinary approach. This follows, as M.T. Carrizosa (2006) rightly notes, from a strong connection between growth and firm survival capabilities. The general trend of enterprises growth in a given sector can influence faster economic growth rate. Moreover, business growth starts to be the reason for introducing innovations into companies by the managerial staff.

The universal economic history shows that the definition of the “suboptimal” (at least as regards social welfare) farm size was a highly problematic issue from the perspective of differences in the interests of the state, landowners, workforce⁴. The initially used criterion (farm size understood as cultivated area), as a specific line of division between small and developing farms, has very approximate character (Zegar J.S. 2012). Similarly, different but used individually economic criteria, constituting economic surpluses (e.g. value added) fail to reflect the complexity of economic growth quantification. Depending on the type of followed school of economics, researchers presented varied approaches to economic growth: the classical and neoclassical approach emphasise considerable significance of large-area farms. But then, economists of the Marxian school considered the rightness of extending the acreage for farms representing socialised character (see Perelman M. 1975; Saito K. 2014).

Already classical economists emphasised that economic growth should be kept in check by some limiting conditions. The concept of steady state economics, by J.S. Mill (initially referring to the state economy), to a certain extent bonds the ideas of agricultural sustainability together (also at micro level). This concept was the starting point for the Solow-Swan growth model and it motivated the representatives of ecological economics to formulate natural limits of economic growth and description requirements that should be set for “sustainable growth” (Anderson M. 2012).

The issue of farm growth in financial terms sparked considerable interest among researchers, especially from English-speaking countries. This is justified by the fact that the “normative pillar” of contemporary disciplines of economic sciences refers, e.g. to identification of “success factors” for economic operators. As rightly noted by C.L. Escalante et al. (2009), the sustainable growth

⁴ This follows also from consideration of the so-called agrarian question in evolutionary terms, taken up by A. Czyżewski and A. Matuszczak (2011).

paradigm (SGP) – formulated at the end of the 1970s by R.C. Higgins⁵ – plays an important role as regards coupling production volume (consequently, sales revenues) with financial decisions of farmers. The theory of corporate finance hammered out a definition apparatus and tools to quantify this type of sustainability (including financial models). The term of sustainable growth rate (SGR), meaning maximum growth rate that an economic operator can allow without increasing the financial leverage, is of vital importance⁶.

Models applicable to companies (mainly limited companies) are based on the following assumptions: (1) keeping the targeted capital structure, while not increasing the equity level; (2) maintaining the targeted dividend payout ratio; (3) sales growth – as quickly as market conditions allow. Because retained earnings are the main source for the new equity the value of sales revenues and the value of assets cannot grow faster than retained earnings plus additional debt. In fact, the SGR is linked to ROE which is useful as it comes to determination of the sustainability rate.

From the microeconomic perspective, growth processes (identified with increasing equity of farms) are sought-after, as they allow farms to benefit from positive economies of scale. The possibilities following from these advantages were quite well defined in agricultural economics. J.C. Hadrich and F. Olson (2011) note that the term of farm size poses a serious problem (given the structural changes in agriculture ongoing and expected by political decision-makers). Although in the 20th century the American agricultural economists (e.g. E.O. Heady) connected the category with farm acreage and value of agricultural production, gross sales started to be one of the discriminants of farm size over time. This is reflected, e.g., in the definition suggested by K. Olson and L. Vu (2009). From the perspective of farm managers, this is equally important as identification of the growth rate, in order to benefit from retained earnings and additionally outside financing (Moss Ch. 2013). According to the research findings of A. Schimke and Th. Brenner (2011), albeit concerning German companies, the average high growth rates and corporate development paths are not the same. The exploration of the reasons for corporate development is complex to the extent that identification of factors explaining growth is insufficient.

⁵ The Higgins concept, created in an unstable period of the U.S. economic growth (the 1970s – oil crisis and its ramifications, e.g. stagflation), assumed constant growth rate for sales revenues at restriction of financial policy (target: debt/equity ratio, dividend payout ratio, profit margin, total assets/net sales). The conceptual framework created by Higgins gives grounds for SGR calculation.

⁶ Sustainable growth rate, initially used to listed companies as output of corporate finance, results from an assumption on limited financing: (1) equity growth as a consequence of retaining some part of profits, (2) the debt/equity ratio will not change. To capture it with an equation (Bodie Z., Merton R.C. 2003, p. 139):

$$\text{sustainable growth rate} = \text{retention rate} \cdot \text{ROE}.$$

As follows from the above equation, profit (and for family farm – income) should be retained. In case of agricultural sector entities (mostly, farms of natural persons with relatively uncomplicated capital structure), the managers have the possibility to accelerate growth above ROE, by raising the debt ratio.

Table 1

Sustainable growth rate – farm approach

Specification	Formal description of interdependencies – explanations
Basic identity derived from the works of R.C. Higgins	$\frac{\Delta S}{S} = \frac{NI}{S}(1 - \omega) \frac{S}{A} \left(1 + \frac{D}{E}\right)$ <p>where: S – sales revenues (sales) A – total assets D – total debt E – equity NI – net income ω – transfers to a household by household owner for private purposes</p>
Sustainable growth rate and its decomposition	$g_s = \prod_{i=1}^4 \gamma_i$ <p>where:</p> $\gamma_1 = \frac{\text{net income}}{\text{sales}}$ $\gamma_2 = \frac{\text{net income} - \text{transfers to a household}}{\text{net income}}$ $\gamma_3 = \frac{\text{sales}}{\text{assets}}$ $\gamma_4 = \frac{\text{assets}}{\text{equity}} = \left(1 + \frac{D}{E}\right).$
Sustainable growth rate (SGR)	$SGC = \ln \frac{S_t}{S_{t-1}} - g_s$ <p>where:</p> S_t, S_{t-1} – sales revenues, respectively, in t, t-1 g_s – sales growth rate $g_s = ROE \frac{\text{equity at the end of the period}}{\text{equity at the beginning of the period}}$ $g_s = \frac{b \cdot ROE}{1 - (b \cdot ROE)}$

Explanatory notes: detailed explanations were based on the paper Budżetowe podstawy... (2014), which includes bibliography references to the aforementioned models (e.g. Escalante C.L. et al. 2009).

Source: own study (taking into account the considerations included in Budżetowe podstawy... 2014).

The paper of C.L. Escalante et al. of 2009 (see *Budżetowe podstawy...* 2014) was fundamental as regards ordering interdependencies between financial efficiency, operating strategies and financial strategies of farms. One of its significant contributions is the measurement of sustainable growth rates for cereal farms and farms specialised in livestock production in the state of Illinois. Table 1 compiles key interdependencies which were used by the team of C.L. Escalante (2009) to carry out an empirical study.

Table 2 compiles also goals, methodical assumptions and key research results of the growth strategy for households – pertaining to the monetary objectives of these entities. Although the presented empirical studies concerned agricultural sector operators in the U.S., some conclusions can be applied to family farms in the EU. The team of A.K. Mishra (2012) reached far-fetching conclusions: the production type, contraction and specialisation turned out to be important determinants of the capital structure (more precisely: assets/equity ratio).

As noted by C.L. Escalante et al. (2009), the growth planned in agriculture is based on long-term predications. Price volatility for agri-food products and yield level impact the current development. The case is unfavourable if the planned growth rate exceeds the sustainable growth rate, then it is necessary to reach for external financing (credits and loans). If the case is opposite (planned growth rate < sustainable growth rate), assets are not fully used and funds are retained, usually in an unproductive manner. American economists claim that farm revenues higher than expected are, to some extent, a source of risk, because they lead to increased cash flows and higher demand for working capital.

Apart from the “traditional” SGR, put forward by R.C. Higgins (1977), a relatively new concept of **Optimal Growth** (OG) was created by M. Handschuh et al. (2014). It assesses growth from the perspective of generating the total shareholder return (TSR) and perspectives of profitability independent from the adopted strategy, business model or financial policy framework of an operator. The OG concept is based on the long-term assessments and forms grounds for determination of the long-term growth objective.

To conclude, the sustainable growth concept bounds together very important categories: growth and sustainability. From the perspective of micro-scale analyses, the concepts integrating links between equity growth rate, debt (or financial leverage) and growing sales revenues on agricultural products can play a major part. This is very important in agriculture, which is inherently characterised by high price risk level and, consequently, income variability, thus giving reason for targeting support instruments, e.g. direct payments, at agricultural sector operators (see Kowalski A. 2014). Some expectations can be also linked to inclusion in the model approach of the suboptimum category for stakeholders and time horizon perspective, which is reflected in the relatively new OG concept.

Table 2

Financial growth of farms – review of empirical research in the U.S.

Specifi- cation	Authors	
	C.L. Escalante and P.J. Barry (2002)	A.K. Mishra et al. (2012)
Research objective	Trying to identify the key growth strategies used by cereal farms in the state of Illinois.	Researching the impact of socio-demographic features, specialisation level, ownership title, and farm location on the three return leverages (ROE), i.e. net profit margin, total asset turnover (TAT) and asset to equity ratio.
Methodo- logical assumptions	<ul style="list-style-type: none"> • The research panel covers the 1996-1999 period. • The executed (real) equity return rate is the best measure of farm growth. • The value of capital and assets was determined by the estimated cost value method. • Assuming that the interdependencies between the expected equity growth rate and its key financial determinants can be expressed by the weighted average of the difference between the expected ROA and debt cost (i), where assets/equity ratio and debt/equity ratio are used as weights. • As a result, equity growth rate will increase along with a growth in ROA, decrease in ROI, tax rate and consumption. This effect will be magnified by an increasing level of the financial leverage. 	<ul style="list-style-type: none"> • The research approach was based on the use of a system of interconnected equations. The research material covered data from the 1996-2009 period at the level of individual farms (under the USDA Agricultural Resource Management Survey, ARMS). The methodology applied in the research used the heterogeneity correction and was based on the repetitive cross-sectional procedure for empirical model estimation with the use of cross-sectional data. • More in-depth use of the Du Pont model.
Key findings and conclusions	<ul style="list-style-type: none"> • Strategies (broken down into two categories: operating and capital management) were used to counteract equity erosion during unfavourable for farmers phases of the business cycle. • “Collective action”, linked to better revenues, cost reduction and capital management strategies, play a significant role. • The remaining sources of income linked to employment and other off-farm investment alternatives added to the low incomes obtained in the analysed period (1996-1999). Moreover, regulation of payments for farms (mainly, by lifestyle adjustment processes and patterns of family expenditures) protected against equity erosion in years when farms were exposed to the market risk (associated with low cereal prices). • Financial strategies and asset management strategies were crucial, e.g. minimising costs involved in debt servicing. This was connected to the use of refinancing strategy and planned repayment of interest. Keeping the high productivity level of assets by full use of excess farm capacity was possible due to implementation of the fixed assets management strategy, covering their liquidation or improvement, and in some cases – also purchase (i.e. real investments). 	<p>Selected key drivers</p> <ul style="list-style-type: none"> • net profit margin: level of educational attainment of a farm manager, farm size, production type and specialisation, additionally, the level of governmental payments, • total asset turnover: age of a farm manager, contracting, specialisation and received governmental payments, • assets/equity ratio: farm size, production type, contracting, specialisation.

Explanatory notes: bibliographical data of the aforementioned items are given in “Literature”

Source: adaptation of the considerations of C.L. Escalante and P.J. Barry (2002), A.K. Mishra et al. (2012).

Sustainable growth category – implications for farm management and agrarian policy

A family farm – because of its socio-economic specificity – is distinguished by a different set of goals than a typical company in the form of a limited company (often separating the ownership function from company management). From the above it follows that a farm, apart from typical economic functions, characteristic of business activity has to implement a number of social and environmental functions. In Poland, research in this field was conducted by, for example, W. Ziętara (1987) and E. Majewski (E. Majewski, W. Ziętara 1997). As indicated by the works on the management sciences, it is possible to arrange goals, considering their hierarchy and grouping, for economic organisations.

One of the strategic management instruments, initially used by listed companies, was the so-called Balanced Scorecard (BSC), whose theoretical foundations were drawn up by R.S Kaplan and D.P. Norton (1992, 1996). Experiences of some countries (e.g. Australia, New Zealand, Denmark, Ireland, the U.S.) show that it is possible to adapt the BSC to the specificity of agricultural sector operators (Paustian M., Theuvsen L. 2014). As rightly noted by Ch. Noell and M. Lund (2003), difficulties in BSC popularisation in agriculture stem from the fact that there is no logical connection between long- and short-term planning and the link between the competitive environment and the internal structure of farms is also weak. According to two Danish agro-economists “increased contract production, environmental regulations, food safety demands and a general increase in business (actually, market – note by M.S.) and financial risks ask for a more professional handling of farming business” (Noell Ch., Lund M. 2003, p. 2). **Sustainability Balanced Scorecard**, put forward by F. Figge et al. (2002) and Th. Bieker (2003), elaborates, to some extent, on the “traditional” Balanced Scorecard. According to F. Figge’s team (2002), integration of the environmental aspects with social ones allows for holistic approach to business organisation management.

From the viewpoint of the considered issue, the learning and growth perspective is vital as it is superordinate to other perspectives, which refers also to the agricultural sector operators (Lissitsa A. 2005). According to H. Nørreklit (2000, p. 67), “the crux of the balances scorecard is the linking together of the measures of the four areas in a casual chain which passes through all four perspectives”. Table 3 presents fragments of the Balanced Scorecard constructed considering the specificity of dairy farms in Denmark.

J. Jaworski and T. Kondraszuk (2013) submitted a quite interesting proposal for the BSC construction for farms, taking into account “sustainable development” perspective. It is especially noteworthy that they have separated 6 perspectives: (1) financial, (2) capacity, (3) processes, (4) sustainable development, (5) buyers, (6) household⁷. The incredibly complex set of objectives and their

⁷ Household perspective stems from an assumption on a specific “duality” of farms, which – according to T. Kondraszuk (2006) – covers a farm and a household.

accompanying measures requires the presence of a well-developed information system, i.e. the possibilities of implementing the BSD proposed by J. Jaworski and T. Kondraszuk are minor, but – as noted by the two researchers – employees of farm advisory centres can act as auxiliaries.

Table 3

Financial perspective in the BSC for dairy farms

Objectives	Measures
Increase total income	Income statement Cost drivers
Improve production efficiency	Gross margin per cow
Improve profitability of investments	ROI Investment portfolio

Source: own study on the basis of Ch. Noell, M. Lund (2003).

Taking into account joint areas of strategic management and management accounting, it is especially important to recognise the so-called **key success factors**, which should be the focus of special attention of the farm managers. E. Nowak (2003, p. 289), following K. Ward, draws attention to (a) “showing economic results at the background of managerial performance”, (b) “selection of relevant performance measures”. The sustainable growth rate can be found in pyramids, which serve to order performance by assumed strategic objectives. At this point, the following should be named: (1) performance pyramid, and (2) value factors pyramid, where sales revenue growth rate is one of the factors determining company value (see Nowak E. 2003, p. 291). This poses a serious challenge for agricultural finances, since the apparatus for farm value management (excluding limited companies) has not been developed to the same extent as for operators representing other sectors of the economy.

From the perspective of **agricultural policy** (both at the EU and national level) a discussion on the problem of trade-off between the traditionally understood sustainability and competitiveness of the agricultural sector will present a serious challenge (at the national or the EU level). Considering the globalisation trends, aimed at benefits from the international treaties, such as: TTIP and CETA, and global food policy framework, the issues linked to **sustainable intensification** (SI) should be considered since its conceptual foundations have been formed already in the 1990s (Franks J.R. 2014). The idea behind SI – as a process – is intensification of agri-food production (e.g. higher yields), not harming the natural environment by changing the cultivation or rearing methods (Firbank L.G. et al. 2013). The sustainability rate of agricultural production systems depends on numerous interconnected factors (including agricultural production intensification level, management of natural resources, production type, location), which differ in time and depending on the type of the agricultural production system (Ripoll-Bosch R. et al. 2012).

The research findings of L.G. Fribank et al. (2012), covering purposefully selected sample of British farms, show that farmers managed to implement objectives assumed by sustainable intensification. They were driven, mainly, by financial reasons, e.g. linked to the possibility to reduce production costs, including also reduce waste and pollution level. Cash transfers, in the form of payments under agri-environmental programmes, also played an important part as they compensated for conserving high level of biodiversity. The British research shows that it is necessary to simplify the assessment of sustainable intensification outputs of farms: with the use of relatively little data from these business operators. This enables to create a certain typology of farm management patterns and, at the same time, it is a tool supporting sustainability monitoring.

It should be noted that operationalisation of the sustainable growth category is and will be a great challenge for agricultural economists and financiers. At the micro level, it is important to develop a concept for sustainability measurement, assessment and monitoring (considering financial approach), which can be based on experiences from the implementation of “prototype” BSC. From the perspective of agrarian policy, the methodological solutions should be noted as they concern monitoring and assessment of the possibilities of agricultural sector developments, also taking into account sustainable intensification.

Conclusions and recommendations

As far as the issues concerning economic, social and environmental aspects of sustainability of farms were fairly well recognised at the theoretical, axiological, methodological and empirical level, then – in case of the operators – there is a certain gap regarding assessment of sustainability of financial policy implementation by a farm. The financial support system under the CAP decides on greater subtlety and complexity (e.g. this follows from complementarity and substitutability of some instruments, mainly under the 2nd CAP pillar) of financial phenomena at farms. This is not without consequences, which are visible in stronger ties between farms and financial infrastructure.

The terms: “sustainable growth”, “sustainable growth rate”, “sustainable intensification” can extend the former framework for sustainability analysis of farms. Considering the development of the agricultural sector (at the national and the EU level), including the opportunities and threats following from a certain level of economic integration with the North American countries (with the U.S. – under TTIP; Canada – under CETA), the need to improve competitiveness of agriculture, but taking into account zoological and social barriers, is increasingly more important. The extent to which the political decision-makers use the instrumental rationality category is also important (according to M. Weber), i.e. selection of measures relevant for the set of objectives adopted in agricultural policy. At the level of an individual farm, it is important to use praxeological criteria of microeconomic rationality, bearing in mind scarcity of natural resources.

The presented paradigm of sustainable growth forms a theoretical base for constructing and improving farm management support instruments. Performance in the field of business finance (including sustainability management approach) and also attempts to adapt the BSC to the needs of farms are promising enough to expect popularisation of the tools, at least among managers of highly viable farms.

Underestimation of the financial dimension of sustainability of farms should be treated as a consequence of underestimation of cash flow analyses. Relying on agricultural income category (including net farm income), excluding the farm's financial situation, leads to a significant simplification that can deform the analytical framework for sustainability. Moreover, vast majority of farms in Poland (excluding farms participating in the FADN system) does not have a recording and reporting apparatus under their accounting systems. This has negative consequences linked, e.g., to limited possibilities of integrated economic-financial-environmental planning of farms.

Future empirical research concerning the financial dimension of sustainability of farms should focus on identification of short- and long-term financial effects of "traditionally" understood sustainability. This should provide an impulse to identify the farmers' motives for agricultural production intensification. It seems that it is necessary to conduct a reliable assessment supported with an in-depth interview on a representative sample of farms or a careful analysis of case studies. The results of the research can be used to classify farms by their capacity to absorb the EU and the national funds, potentially supporting the "sustainable growth of agriculture."

The measurement of sustainability of farms should highlight more the financial aspect. This does not, however, result from excessive exposure of financial phenomena in real sphere entities, but from a stronger link between farms and financial infrastructure. Model capture of sustainability or even various typological approaches or maps – useful for agricultural policy-makers – can be improved due to balanced increase in the number of variables gathered by the FADN system.

Literature:

1. Anderson M.: Economics, Steady State. <http://umaine.edu/soe/files/2009/06/Economics-Steady-State.pdf>, 2012.
2. Baum R.: Sustainable development of agriculture and its assessment criteria. *Journal of Agribusiness and Rural Development*, issue 1(7), 2008, 5-15.
3. Bieker T.: Sustainability Management with the Balanced Scorecard, Corporate Sustainability. 5th International Summer Academy on Technology Studies, Conference Proceedings (ed. S. Karner, I. Oehme, U. Seebacher), Deutschlandsberg, Austria, July 13-19.2003, http://sustyworks.in3online.com/downloads/Bieker_SA03.pdf (access date: 10.03.2015).
4. Bodie Z., Merton R.C.: *Finanse*. Polskie Wydawnictwo Ekonomiczne, Warszawa 2003.

5. Budżetowe podstawy poprawy konkurencyjności polskiego rolnictwa (Synteza) (ed. J. Kulawik). Program Wieloletni 2011-2014, no. 143. IERiGŻ-PIB, Warszawa 2014.
6. Carrizosa M.T.: Firm growth, persistence and multiplicity of equilibria: an analysis of Spanish manufacturing and service industries. University Rovira i Virgili, July, 2006, <http://www.tdx.cat/bitstream/handle/10803/8447/Chapter2.pdf?sequence=11> (access date: 10.01.2015).
7. Czyżewski A., Matuszczak A.: Dylematy kwestii agrarnej w panoramie dziejów. Zeszyty Naukowe SGGW w Warszawie – Ekonomika i Organizacja Gospodarki Żywnościowej 2011, no. 90, 5-23.
8. Escalante C.L., Turvey C.G., Barry P.J., 2009: Farm business decisions and the sustainable growth challenge paradigm. *Agricultural Finance Review*, vol. 69, issue 2, 228-257.
9. Figge F., Hahn T., Schaltegger S., Wagner M.: The Sustainability Balanced Scorecard – linking sustainability management to business strategy. *Business Strategy and the Environment*, 11(2002), 2002, 269-284.
10. Financial Times: Definition of business sustainability. <http://lexicon.ft.com/Term?term=business-sustainability> (access date: 11.01.2015).
11. Firbank L.G., Elliott J., Drake B., Cao Y., Gooday R.: Evidence of sustainable intensification among British farms. *Agriculture, Ecosystems and Environment* 173 (2013), 2013, 58-65.
12. Flejterski S.: Zakończenie [in:] S. Flejterski, J.K. Solarz: *Komparatystyka finansów*. Wydawnictwo C.H. Beck, Warszawa 2015.
13. Franks J.R.: Sustainable intensification: A UK perspective. *Food Policy* 47 (2014), 2014, 71-80.
14. Hadrich J.C., Olsen F.: Joint measurement of farm size and farm performance: A confirmatory factor analysis. *Agriculture Finance Review*, vol. 71, issue 3, 295-309.
15. Handschuh M., Dringenberg H., Jonk G., Maaß D., Niewiem S., Rasker T., Velthuis C., Kearney A.T.: Optimales Wachstum [in:] *Exzellente Managementscheidungen: Methoden, Handlungsempfehlungen. Best Practices* (ed. P.F.-J. Niermann, A.M. Schmutte). Springer Fachmedien, Wiesbaden 2014, 301-311.
16. Higgins R.C.: How much growth can a firm afford? *Financial Management*, 6(3), 1977, 7-16.
17. Jaworski J., Kondraszuk T.: Ramy koncepcyjne zastosowania strategicznej karty wyników w gospodarstwie wiejskim. *Zeszyty Teoretyczne Rachunkowości*, vol. 74 (130), SKWP, Warszawa 2013, 45-63.
18. Kaplan R.S., Norton D.P.: Using the Balanced Scorecard as a strategic management system. *Harvard Business Review*, January-February, 1996, 75-85.
19. Kaplan R.S., Norton D.P.: The Balanced Scorecard as a strategic management system. *Harvard Business Review*, January-February, 1992, 71-79.
20. Kates R.W., Clark W.C., Corell R., Hall J.M., Jaeger C.C., Lowe I., McCarthy J.J., Schellnhuber H.J., Bolin B., Dickson N.M., Faucheux S., Gallopín G.C., Gruebler A., Huntley B., Jäger J., Jodha N.S., Kasperson R.E., Mabogunje A., Matson P., Mooney H., Moore III B., O’Riordan Th., Svedin U.: *Sustainability Science. Research and Assessment Systems for Sustainability Program Discussion Paper 2000-33*. Cambridge, MA: Environment and Natural Resources Program, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University, 2000.
21. Kondraszuk T.: Gospodarstwo wiejskie jako podstawa rachunku ekonomicznego – ujęcie metodyczne. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, vol. 8, issue 1, 2006, 80-84.

22. Kowalski A.: Evolution of the role and significance of agriculture for the Polish economy in 1989-2014. *Problems of Agricultural Economics*, Supplement do Zagadnienia Ekonomiki Rolnej, no. 4, 2014, 3-26.
23. Lissitsa A.: A new strategic management instrument for agricultural enterprises in transition – The case study of balanced scorecard implementation in Ukraine. http://www.uni-goettingen.de/de/kat/download/1a64085fda29da93c0282f0f4f3518fc.pdf/posterbeitrag_lissitsa.pdf (access date: 10.03.2015).
24. Majewski E., Ziętara W.: System celów w rolniczych gospodarstwach rodzinnych. *Zagadnienia Ekonomiki Rolnej*, no. 6, 1997, 29-43.
25. Mishra A.K., Harris J.M., Erickson K.W., Hallahan Ch., Detre J.D.: Drivers of agricultural profitability in the USA. *Agricultural Finance Review*, vol. 72, issue 3, 2012, 325-340.
26. Moss Ch.: *Agricultural Finance*. Routledge, Oxon 2013.
27. Noell C., Lund M.: The Balanced Scorecard (BSC) for Danish farms – vague framework or functional instrument? [in:] *Farm management. Proceedings of the Nordic Association of Agricultural Scientists Seminar* no. 345, 2003, 187-204.
28. Nörreklit H.: The balance on the balanced scorecard – a critical analysis of some of its assumptions. *Management Accounting Research*, 11(1), 2000, 65-88.
29. Nowak E.: *Zaawansowana rachunkowość zarządcza*. Polskie Wydawnictwo Ekonomiczne, Warszawa 2003.
30. Olson K., Vu L.: Economic efficiency in farm households: trends, explanatory factors and estimation methods. *Agricultural Economics*, vol. 40, 2009, 587-599.
31. Paustian M., Theuvsen L.: Die Balanced Scorecard als Steuerungsinstrument in der Landwirtschaft. http://oega.boku.ac.at/fileadmin/user_upload/Tagung/2014/Short_Papers_2014/IV-4-71_Paustian_et_al-OEGA_2014.pdf (access date: 10.03.2015).
32. Perelman M.: Natural resources and agriculture under Capitalism: Marx's Economic Model. *American Journal of Agricultural Economics*, vol. 57, no. 4 (Nov. 1975), 1975, 701-704.
33. Ripoll-Bosch R., Díez-Unquera B., Ruiz R., Villalba D., Molina E., Joy M., Olaizola A., Bernués A.: An integrated sustainability assessment of mediterranean sheep farms with different degrees of intensification. *Agricultural Systems* 105 (2012), 2012, 46-56.
34. Saito K.: The emergence of Marx's Critique of modern agriculture. *Ecological Insights from his Excerpt Notebooks*, vol. 66, issue, 05 (October) 2014, 25-46.
35. Scerri A., James P.: Accounting for sustainability: combining qualitative and quantitative research in developing "indicators" of sustainability. *International Journal of Social Research Methodology*, 13:1, 2010, 41-53.
36. Schimke A., Brenner Th.: Long-run factors growth – a study of German firms. Karlsruhe Institute of Technology (KIT), Department of Economics and Business Engineering. Working Paper Series in Economics, no. 21, April 2011.
37. Solarz J.K.: *Nanofinanse. Codzienność zmienia świat*, Wydawnictwo C.H. Beck, Warszawa 2012.
38. Wojtyna A.: Czy w wyniku kryzysu finansowego ekonomia otworzy się bardziej na psychologię? [in:] *Węzeł polski. Bariery rozwoju z perspektywy ekonomicznej i psychologicznej* (ed. P. Kozłowski). Instytut Nauk Ekonomicznych PAN, Instytut Psychologii PAN, Warszawa 2011, pp. 169-184.

39. Wrzaszcz W.: Czynniki kształtujące zrównoważenie gospodarstw rolnych. *Journal of Agribusiness and Rural Development*, 2012, issue 2(24), 285-296.
40. Wrzaszcz W.: Zrównoważenie indywidualnych gospodarstw rolnych w Polsce objętych FADN. *Zagadnienia Ekonomiki Rolnej*, no. 1, 2013, 73-90.
41. Zegar J.S.: Współczesne wyzwania rolnictwa. WN PWN, Warszawa 2012.
42. Zhou H., Wit G. de: Determinants and dimensions of firm growth. EIM Research Reports, H200903, 2009.
43. Ziętara W.: System celów w państwowych przedsiębiorstwach rolniczych. *Zagadnienia Ekonomiki Rolnej*, no. 1, 1987.
44. Zrównoważenie polskiego rolnictwa (ed. J.S. Zegar). *Powszechny Spis Rolny 2010*, GUS, Warszawa 2013.

MICHAŁ SOLIWODA

Instytut Ekonomiki Rolnictwa
i Gospodarki Żywnościowej – PIB
Warszawa

DYLEMATY WOKÓŁ WYMIARU FINANSOWEGO ZRÓWNOWAŻENIA GOSPODARSTW ROLNICZYCH

Abstrakt

Zrównoważenie, jako swoista „metakategoria”, rozpatrywana w ujęciu inter-, czy nawet transdyscyplinarnym, odnosi się również do zjawisk o charakterze monetarnym. Dotychczas ujęcie finansowe zrównoważenia gospodarstw rolniczych nie zostało wyeksponowane. Celem opracowania jest uwypuklenie wybranych kwestii teoretyczno-metodologicznych, związanych z wymiarem finansowym zrównoważenia gospodarstw rolniczych. Przyjęto następujące cele szczegółowe: (1) powiązanie dorobku teoretycznego i aparatu metodologicznego dotyczącego wzrostu zrównoważonego (w ujęciu finansowym) gospodarstw rolniczych z koncepcjami zrównoważenia, (2) zidentyfikowanie asocjacji między wzrostem zrównoważonym a wybranymi problemami zarządzania gospodarstwami rolniczymi i polityki agrarnej. Opieranie się na kategorii dochodu rolniczego (w tym np. dochód z rodzinnego gospodarstwa rolniczego, net farm income), z pominięciem sytuacji finansowej gospodarstwa, stanowi pewne uproszczenie spływające ramy analityczne zrównoważenia. Pojęcia „wzrostu zrównoważonego”, „stopy wzrostu zrównoważonego”, „zrównoważonej intensyfikacji” mogą rozszerzyć dotychczasowe ramy analizy zrównoważenia gospodarstw rolniczych, a także być przesłanką do konstruowania/udoskonalania instrumentów wspomagających zarządzanie gospodarstwem czy monitoring i ocenę skutków polityki rolnej.

Słowa kluczowe: zrównoważenie, wzrost zrównoważony, finanse rolnictwa, metodologia finansów, gospodarstwo rolnicze

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