

**PRACE NAUKOWE**

Uniwersytetu Ekonomicznego we Wrocławiu

**RESEARCH PAPERS**

of Wrocław University of Economics

**263**

# Quantitative Methods in Accounting and Finance



edited by

**Edward Nowak**

**Ruslan Motoryn**



Publishing House of Wrocław University of Economics  
Wrocław 2012

Reviewers: Tadeusz Galanc, Jan Turyna

Copy-editing: Marcin Orszulak

Layout: Barbara Łopusiewicz

Proof-reading: Joanna Szynal

Typesetting: Comp-rajt

Cover design: Beata Dębska

This publication is available at [www.ibuk.pl](http://www.ibuk.pl), [www.ebscohost.com](http://www.ebscohost.com),  
and in The Central and Eastern European Online Library [www.ceeol.com](http://www.ceeol.com)  
as well as in the annotated bibliography of economic issues of BazEkon  
[http://kangur.uek.krakow.pl/bazy\\_ae/bazekon/nowy/index.php](http://kangur.uek.krakow.pl/bazy_ae/bazekon/nowy/index.php)

Information on submitting and reviewing papers is available  
on the Publishing House's website  
[www.wydawnictwo.ue.wroc.pl](http://www.wydawnictwo.ue.wroc.pl)

All rights reserved. No part of this book may be reproduced in any form  
or in any means without the prior written permission of the Publisher

© Copyright by Wrocław University of Economics  
Wrocław 2012

**ISSN 1899-3192**

**ISBN 978-83-7695-274-1**

The original version: printed

Printing: Printing House TOTEM

## Contents

Preface .....	7
<b>Natalia Bielous:</b> Methodology overview of the assessment of the economic security of an enterprise .....	9
<b>Magdalena Chmielowiec-Lewczuk:</b> Business insurance costing for the purpose of decision-making calculi .....	16
<b>Edward Nowak:</b> The possibilities of applying quantitative methods in postulated costing .....	27
<b>Anna Isayeva:</b> Topical issues of the disclosure of information about financial investments in financial statements .....	38
<b>Joanna Koczar:</b> Organization of accounting in the Russian Federation. Selected issues .....	44
<b>Natalia Kovtun, Anzhela Ignatyuk:</b> Multidimensional assessment of the potential and development level of Ukraine's economy with respect to economic activities .....	53
<b>Mirosława Kwiecień:</b> The fair value dilemmas .....	69
<b>Lesya Leshchiiy:</b> Methods used to define performance evaluation of innovative processes and products .....	73
<b>Grzegorz Lew:</b> An application of statistical methods in financial statements auditing .....	80
<b>Michaylo Maliuzhenko:</b> Methods of defining the interest rate amount based on the analysis of the dynamics of the IGLB market of Ukraine .....	91
<b>Ruslan Motoryn:</b> Harmonization of accounting and the system of national accounts .....	101
<b>Tetiana Motoryna:</b> Scope for using financial accounting data for the purposes of the system of national accounts .....	109
<b>Vasylij Mukoviz:</b> Capital evaluation in fiscal accounting with object of business operation .....	116
<b>Maria Nieplowicz:</b> A review of the measures used in the assessment of municipality management .....	121
<b>Bartłomiej Nita:</b> Two approaches to external financing needs estimation in financial planning .....	130
<b>Maciej Norkowski:</b> The Beyond Budgeting concept and multifaceted criticism of traditional budgeting .....	140
<b>Marta Nowak:</b> Advantages and disadvantages of auditor profession according to students of economics .....	150
<b>Michał Poszwa:</b> Models of business tax result statement .....	162
<b>Alfred Szydelko:</b> Application of the actuarial method in measuring provisions for future employee benefits .....	173
<b>Marcin Wierzbiński:</b> The main aspects of energy management .....	182

## Streszczenia

<b>Natalia Bielous:</b> Systematyka metodycznych podejść do oceny ekonomicznej sytuacji przedsiębiorstwa .....	15
<b>Magdalena Chmielowiec-Lewczuk:</b> Kalkulacja kosztów ubezpieczeń dla przedsiębiorstw na potrzeby rachunków decyzyjnych .....	26
<b>Edward Nowak:</b> Możliwości zastosowania metod ilościowych w rachunku kosztów postulowanych .....	37
<b>Anna Isayeva:</b> Aktualne problem ujawnienia informacji o finansowych inwestycjach w sprawozdawczości finansowej .....	43
<b>Joanna Koczar:</b> Organizacja rachunkowości w Federacji Rosyjskiej. Wybrane problemy .....	52
<b>Natalia Kovtun, Anzhela Ignatyuk:</b> Wielowymiarowa ocena potencjału i rozwoju gospodarki Ukrainy na podstawie pozycjonowania rodzajów działalności ekonomicznej .....	68
<b>Mirosława Kwiecień:</b> Dylematy wartości godziwej .....	72
<b>Lesya Leshchiiy:</b> Metoda oceny systemu wskaźników funkcjonowania innowacyjnych procesów i produktów .....	79
<b>Grzegorz Lew:</b> Wykorzystanie metod statystycznych w badaniu sprawozdań finansowych .....	90
<b>Michaylo Maliuzhenko:</b> Metody określania wysokości stopy procentowej wykorzystujące analizę dynamiki rynku OWPP Ukrainy .....	100
<b>Ruslan Motoryn:</b> Harmonizacja rachunkowości i systemy rachunków narodowych .....	108
<b>Tetiana Motoryna:</b> Możliwości wykorzystania danych z rachunkowości finansowej do celów systemu rachunków narodowych .....	115
<b>Vasylj Mukoviz:</b> Wycena kapitału w rachunkowości finansowej a zarządzanie przedsiębiorstwem .....	120
<b>Maria Nieplowicz:</b> Przykładowe mierniki służące do oceny zarządzania miastem .....	129
<b>Bartłomiej Nita:</b> Dwa podejścia do szacowania zapotrzebowania na zewnętrzne źródła finansowania za pomocą planowania finansowego .....	139
<b>Maciej Norkowski:</b> Koncepcja <i>beyond budgeting</i> i wielopłaszczyznowa krytyka tradycyjnego budżetowania .....	149
<b>Marta Nowak:</b> Zalety i wady pracy audytora według studentów studiów ekonomicznych .....	161
<b>Michał Poszwa:</b> Modele rachunku wyniku podatkowego przedsiębiorstwa .....	172
<b>Alfred Szydelko:</b> Zastosowanie metody aktuarialnej do pomiaru rezerw na przyszłe świadczenia pracownicze .....	181
<b>Marcin Wierzbiński:</b> Podstawowe aspekty zarządzania energią .....	190

## **Ruslan Motoryn**

Ukrainian State University of Finance and International Trade  
Lublin University of Technology

---

# **HARMONIZATION OF ACCOUNTING AND THE SYSTEM OF NATIONAL ACCOUNTS**

---

**Summary:** The article presents scientific grounds for the methodological development of the harmonization of accounting and the system of national accounts (SNA). The following tasks are covered: a) certainly correlation and intercommunications of accounting and statistical account in modern terms; b) finding out pre-conditions to the harmonization of accounting and SNA; c) exposing the potential of accounting in relation to its harmonization with SNA; d) describing an approach to the concordance of the concepts of accounting and SNA for the harmonization of accounting information; e) systematizing the basic elements of accounting (financial) reports, tax accounting and SNA.

**Key words:** harmonization, accounting, system of national accounts.

## **1. Introduction**

The influence of the global economy and international competition on the methodology of accounting, financial reporting and economic statistics (particularly, the system of national accounts – SNA) continues to increase. Another pressing issue for Ukraine is unification of information space. The choice of a subject and the relevance of this research are defined by an ongoing search for the ways to harmonize accounting and statistics, namely, defining a set of principles for systematizing and unifying accounting information.

Scientific research on the issues of the interrelation between accounting and economic statistics, whether theoretical or practical, is relatively scarce in Ukraine. Ukrainian analytical publications on the subject of the SNA and its interrelation with accounting date back to the introduction of the SNA in Ukraine, starting from the second half of the 1980s. Such publications include works by S. Gerasymenko, V. Golovko, I. Nikitina [Gerasymenko et al. 2005], A. Golovach [2004], M. Melamed [2004], T. Motoryna [Motoryn, Motoryna 2001], P. Nagirnyak [1997] and other authors.

The objective of the article is to substantiate methodological approaches to harmonizing the national accounting systems and the SNA. In order to achieve this objective, the following tasks must be accomplished:

- determining the relation and connection between accounting and statistics in the current conditions;
- determine the prerequisites for harmonizing accounting and the SNA;
- discovering the potential of accounting in terms of its harmonization with the SNA;
- characterizing the approach to coordinating the sets of the terms and definitions of accounting and the SNA in order to harmonize accounting information;
- harmonizing basic elements of accounting, tax accounting and the SNA.

The objects of the research are the main terms and categories of accounting and the SNA, and the basic elements of economic statistics, financial accounting and tax accounting of companies in Ukraine. The subject of the research is the issue of a theoretical and practical harmonization of accounting and the SNA.

## 2. Accounting models

Traditionally, two approaches to organizing accounting are used across the world. Each approach has exactly opposite consequences for the state statistics bodies, compared to the other one.

1. The first tradition is aimed at satisfying a number of requirements, particularly, at ensuring that company data is comparable. Revenues and expenses are classified, which allows economic analysis. Statistical macroeconomic systems use such sources as the basic data for constructing appropriate models.

2. The second approach envisages analyzing company reports – namely, income statements – with a focus on parameters that reflect the profitability of investments. It does not distinguish between managerial and financial accounting. The income statement presents information on financial results, which are carefully observed by investors and shareholders. Such a presentation of data does not describe the main business process, i.e. it does not use production factors. Therefore, the structure of this approach is not acceptable from the point of view of an economic analysis.

The two above approaches to organizing accounting define different relations between statistics and accounting in various countries.

In the countries using the first approach (such as France), statisticians actively use financial accounting data, and the financial accounting and reporting system is designed to structure the information system. The system of statistical data on companies is tightly integrated, and databases are widely unified. It is obvious that integrating the languages of accounting, statistics, taxation and legislation provides for considerable savings of the entire society's resources and decreases the total cost of information.

In the countries following the second approach (such as the USA), statisticians do not rely on financial accounting data of companies in their work. Because of this, they need to perform considerably more operations in order to coordinate different information sources on the macroeconomic level. In this case, the integration level of the statistics system is relatively low, and databases are not unified. Statisticians do not use the data of financial accounting. Once per five years, they conduct a survey encompassing the entire production system, and hold annual inspection of companies on an annual basis. Tax accounting has no link to existing financial accounting practices and does not play a significant part in statistics.

Under this approach, the quality of statistical data is decreased due to the lack of harmonization between statistical and accounting concepts, as the latter are created by companies themselves, for the purposes of internal accounting. Furthermore, the cost of information increases significantly. This is something that transitional economies, such as Ukraine, can hardly afford.

In any case, regardless of a data collection method, statisticians have to process data received from companies in order to prepare consolidated figures required for economic analysis. Therefore, Ukraine must have a financial accounting database that would be harmonized with statistics and aimed at all user categories.

Due to this, Ukraine's transition to the SNA was tightly connected to the financial accounting reform, which is clearly indicated in the Concept for Development of the System of National Accounts [Cabinet Council of Ukraine 2002], the Program for Developing the System of National Accounts for the Period Ending 2010 [Cabinet Council of Ukraine 2003], the Strategy for Modernizing the Financial Accounting System in the State Sector in the Years 2007–2015 [Cabinet Council of Ukraine 2007], and the Resolutions of the Cabinet of Ministers of Ukraine [Cabinet Council of Ukraine 1992, 1993]. Therefore, Ukraine uses the so-called “continental” approach to organizing accounting, which predicts that financial accounting data can be used by numerous external users, including statistics bodies. This gives relevance to the study of the possibilities and ways of reconciling the SNA and accounting, primarily in terms of terminology, interpretation, and classification of assets, revenues, expenses, taxes, and other terms and figures.

### **3. Harmonizing accounting and the system of national accounts as a form of interrelation between the two systems in the current conditions**

At the current stage of the international integration in the sphere of economics, the issue of unifying accounting and statistics has been receiving more and more attention. Today, two approaches are known to solve the issue of harmonization and standardization.

**Harmonization** of accounting envisages certain consistency and coordination, adhering to the principles of accounting and statistics, and preparation of reporting by a group or alliance of countries, such as the EU or CIS. It also predicts unification and mutual conformity of countries' legislations on accounting and statistics, and each country having its own model for accounting organization, as well as a system of standards. The main task of harmonization lies in ensuring that such standards do not significantly differ from similar standards of other countries that are members of the alliance, i.e. that the standards are in mutual harmony.

**Standardization** of accounting and statistics envisages establishing single norms and requirements for accounting and statistics, and applying a unified set of standards to provide for relative regulation of an accounting event and its reflection in the report. It allows globalizing the accounting policy, and the principles and systems of financial accounting on the international level, as implemented by the Committee on International Financial Reporting Standards. The standardization approach means that a unified set of standards must exist for any accounting situation that may arise in any country, and therefore no need to develop national standards arises.

Financial accounting is an accounting system that can satisfy information-related queries of a wide range of users and that allows aggregating financial ratios by means of preparing consolidated and summarized financial reporting. Being a micro-level accounting system, financial accounting is required as a source of information for macroeconomic summaries, particularly, for creating a statistics system of national accounts. At the same time, there is an issue of data consolidation and coordination.

In the system of national accounts, transactions are accounted for according to the accrual method, while the reports of the state and local budgets show the revenues and expenses at the time of appropriate payments, therefore using the cash method. Taking this into consideration, the financial accounting system in the state sector must be improved with regard to the requirements of the international standards; a single methodological approach to financial accounting and reporting must be adopted. This issue, among others, will be resolved as part of the Strategy for Modernizing the Accounting System in the State Sector in the Years 2007–2015 [Cabinet Council of Ukraine 2007].

Furthermore, different classifications of financial assets and liabilities used to prepare financial reports in different institutional sectors and subsectors of the economy make it more complicated to develop a financial account for financial assets classified according to the appropriate unified international classification.



#### **4. Potential of financial accounting in harmonizing financial accounting, tax accounting and the SNA systems**

The potential of financial accounting is explained by its place among the accounting systems. Only the SNA, financial accounting and tax accounting systems are recognized on the national level. These are the systems that each company encounters, and therefore, both tax and financial accounting can be viewed as sources of useful information for the SNA purposes. The official status of financial accounting, the SNA and tax accounting makes it necessary to harmonize them in order to coordinate accounting information on different levels of the economy.

Harmonization of the official accounting systems is caused by their similar characteristics, such as:

- the use of economic categories in the set of terms and definitions;
- orientation at external users of information;
- the use of accounting principles;
- aggregation (consolidation, summarizing) of received data;
- the basis for ratings;
- using monetary terms;
- initiatives aimed at constant improvement of data quality.

Creating accounting systems according to the “deviation” method demands a great amount of research and descriptive work (first of all, in the field of terms and definitions) in order to establish the rules for transforming financial accounting figures into SNA figures.

The financial accounting system will play a definitive part, because out of all accounting systems only financial accounting is potentially capable of presenting the fact of business activity in a form that reflects its economic essence to the maximum, owing to the subject and methods of financial accounting that had been developed over centuries. Accounting policies of companies allow choosing economically feasible accounting methods in order to reliably reflect company’s financial and business activity.

Organizing financial accounting from the standpoint of the interests of statistics bodies is theoretically possible, but would violate the principle of neutrality of financial accounting, which protects the interests of other users of financial accounting.

Underestimating the analytical capabilities of financial accounting leads to a disruption of the balance of interests of economic process participants. Furthermore, financial accounting is prepared by specially trained professionals and subject to mandatory audit; therefore, the reliability of data contained in financial accounting is increased, in turn increasing its usefulness as a source of information for statistics.

## 5. Systemic representation of the basic elements of financial statements, tax statements and the SNA

After identifying substantiated and unsubstantiated deviations between the terminology used in the SNA and in tax accounting, financial statements figures that can be used to form national accounts can be identified, with consideration to the coordinated set of terms and definitions. In other words, an algorithm can be created to coordinate the figures of financial statements, tax statements and the SNA for the purposes of the SNA accounts: the production account, the revenue creation account, the primary income distribution account, the capital account and the financial account.

A comparative analysis of the terms “sales revenue”, “sales”, “output”, “revenue” and “capital”, namely, the terms describing the business activity of a business entity on micro- and macroeconomic levels, provided the following basic results:

- the SNA term “output” and the financial accounting term “sales” are not equivalent, either in qualitative or quantitative terms; the term “sales” approximates “output” for VAT purposes, because it includes goods evaluated at market prices; in this case, the SNA can be provided with additional information; the associated transformation expenses would be low (VAT declarations are submitted electronically);
- the term “services” in the SNA corresponds to the term “services, works” in financial and tax accounting;
- the term “goods” (a part of material and production inventories intended for sale) in financial accounting is narrower compared to the same term used in the SNA and tax accounting, where goods are defined as products intended for sale;
- the term “property rights” is only used in tax legislation, with the same meaning as it has in the civil law; the financial accounting system and the SNA need development in terms of accounting for property rights;
- the SNA term “product output for own end consumption” coincides with the tax accounting term “consumption for own needs”; terminology on this subject should be unified;
- the terminology on the prices used by different accounting systems.

This analysis of the set of the terms and definitions of different accounting systems demonstrated the implementation of the semantic principle during harmonization of terms. It also formed a foundation for creating an algorithm for coordinating the figures (elements) of financial statements, tax statements and the SNA by identifying the financial accounting figures that can be used to form, for example, the production account. The resource part of the production account for the economy as a whole shows the output of goods and services in basic prices, net product taxes and net import taxes. The output of goods and prices is the value of goods and services, that is, the result of production activities of residents during given time, in-

side and outside the economic territory of a country. A difference is made between market and non-market output. Market output of goods must include goods sold (including goods transferred to other branches of the same company and goods provided to company employees as labor remuneration in kind), and changes in the amount of finished goods, in-house intermediate products and work-in-progress.

Non-market output includes goods and services that were produced during the current period and used for own end consumption or accumulation of equity, provided to other institutional units of a company free of charge or at prices that do not influence demand, or retained by the manufacturer as reserves of floating material assets to be used in future periods for non-market purposes.

**Table 1.** Comparison indexes of tax statements, SNA and financial statements

Index from tax statements	Index from SNA	Index from financial statements
Value-added tax	Market output	Sale (net) proceeds (minus VAT and excise)
Custom duty		Change of costs goods in process
Sales of products without return		
Transfer of products for own needs	Non-market output	Change of finished commodity
Building and assembly jobs for own needs		

Source: author's own study.

According to SNA-2008, the production account includes the output of the "hidden economy" [U.N. 2009, p. 471]. Obviously, financial accounting does not contain such information.

The "consumption" column of the production account reflects intermediary consumption, which is equivalent to the value of goods (except for equity) and market services consumed in the production process during the current period.

The sources of information for forming national accounts are financial accounting forms (balance sheet (form N 1), income statement (form N 2), statement of shareholders' equity (form N 3), statement of cash flows (form N 4), notes to financial accounting (form N5) as well as tax and customs declarations.

## 6. Conclusions

Resolving these issues allows the users to conduct a more in-depth analysis of macroeconomic processes and structural changes in the economy and increase the quality of forecasting the economic development of a country and of state economic policy development.

## References

- Закон «Про бухгалтерський облік та фінансову звітність в Україні», Відомості Верховної Ради України, 1999, №40, ст. 365.
- Закону України «Про державну статистику». Відомості Верховної Ради України, 2002, №29, ст. 194.
- [Cabinet Council of Ukraine 2002] *Концепція розвитку системи національних рахунків* (розпорядження Кабінету Міністрів України від 25.07.2002 р. № 413-р).
- [Cabinet Council of Ukraine 2003] *Програма розвитку системи національних рахунків на період до 2010 року* (постанова Кабінету Міністрів України від 07.04.2003 р. № 475).
- [Cabinet Council of Ukraine 2007] *Стратегія модернізації системи бухгалтерського обліку в державному секторі на 2007–2015 роки* (постанова Кабінету Міністрів України від 16 січня 2007 р. № 34).
- [Cabinet Council of Ukraine 1992] *Постанова Кабінету Міністрів України від 28 грудня 1992 року №727 "Про впровадження системи національних рахунків"*.
- [Cabinet Council of Ukraine 1993] *Постанова Кабінету Міністрів України від 4 травня 1993 року №326 "Про концепцію побудови національної статистики України та Державної програми переходу на міжнародну систему обліку і статистики"*.
- [U.N. 2009] *System of National Accounts 2008*. New York, 2009. Sales No. E.08.XVII.29, document symbol ST/ESA/STAT/SER.F/2/Rev.5U.N.— 722 p.
- [Gerasymenko et al. 2005] Герасименко С.С., Головка В.А., Нікітіна І.М., *Система національних рахунків: навчальний посібник*. К.: ІВЦ Держкомстату України, 2005. – С.216.
- [Golovach 2004] Головач А.В., *Статистичне забезпечення управління економікою*. К.КНЕУ, 2004.
- [Melamed 2004] Меламед М., *"Система национальных счетов и усовершенствование управления экономикой Украины"* // Бизнес від 8 лютого 1994.
- [Motoryn, Motoryna 2001] Моторин Р.М., Моторина Т.М., *Система національних рахунків: Навч. посібник* - К.: КНЕУ, 2001. – 336 с.
- [Nagirnyak 1997] Нагірняк П., *Система національних рахунків України: реальність і можливості майбуття* // Інформаційний бюлетень Державного комітету статистики України. - 1997. - №№ 7–8.

## HARMONIZACIJA RACHUNKOWOŚCI I SYSTEMY RACHUNKÓW NARODOWYCH

**Streszczenie:** W artykule uzasadniono metodyczne podejście do harmonizacji rachunkowości i systemów rachunków narodowych (SRN). W szczególności w artykule zrealizowano następujące zadania: a) przedstawiono współzależność i związki wzajemne pomiędzy rachunkowością i metodami statystyki; b) przedstawiono przesłanki do harmonizacji rachunkowości i SRN; c) scharakteryzowano podejście do uzgodnienia aparatu rachunkowości i SRN w celach harmonizacji ewidencji zdarzeń gospodarczych; d) poddano systematyzacji bazowe elementy sprawozdawczości finansowej, podatkowej i SRN.

**Słowa kluczowe:** harmonizacja, rachunkowość, system rachunków narodowych.