



ECONOMIC ANNALS-XXI

ISSN 1728-6239 (Online)
ISSN 1728-6220 (Print)
<https://doi.org/10.21003/ea>
<http://www.soskin.info/ea/>

Volume 183 Issue (5-6)'2020

Citation information:

Lentner, Cs., Molnár, P., & Nagy, V. (2020). Accrual accounting and public finance reforms in Hungary: the study of application in the public sector. *Economic Annals-XXI*, 183(5-6), 89-105. doi: <https://doi.org/10.21003/ea.V183-09>



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Accrual accounting and public finance reforms in Hungary: the study of application in the public sector

Abstract. Introduction. The increasing measurability of performances in the public sector in the countries of the post-soviet region, including Hungary, has come to the limelight in recent decades. Accrual accounting, adopted in Hungary in 2014 on the recommendation of the European Union, provides decision-makers with reliable information and simultaneously improves transparency in spending.

Purpose and Methodology. This study focuses on the impacts and synergies of the parallel comprehensive reforms in the public finances and the adoption of the accrual accounting system. We conducted an empirical research among 2425 budgetary organisations (during June 2018 - January 2019) and analysed the correlation between the variables with cross-table analysis. Our survey covered 19.1 per cent of all the budget organisations in Hungary. Thus, thanks to the sample size the survey results analysis gives a comprehensive view of the entire country based on the real feedback regarding the implementation of the new practices.

Results. In the course of the survey, the organisations were asked to describe how they were affected by the transition to the new accounting system, how they had prepared for the statutory changes and compliance, what additional tasks the adoption of the new system required of them, and how they evaluated the impacts of the application of accrual accounting after five years. The inquiry focussed on the impact this new accrual-based accounting system had on the business management of the given organisation and thus the efficient use of public funds.

The results confirm that the historical background and the peculiarities of managing public funds in a country should also be taken into account during the adoption of reforms along with thorough preparation. Our research also sheds light on the fact that the successful 2014 adoption of accrual accounting could achieve its full purpose in an environment ensured by comprehensive public finance reforms and laws adopted after 2010. In other words, the precondition of enforcing the new rules of accrual accounting applied in the public sector included the reinforcement of budgetary regulation and control procedures.

Conclusion. The study reports more favourable public sector procedures, proves that the adoption of accrual accounting has been justified and that the higher focus on performance and efficiency achieved through accrual accounting is important.

Keywords: Accrual Accounting; Public Sector; Hungary; Public Finance Reforms; Public Funds; Budgetary Regulation and Control; Performance; Compliance; Organization; Crosstab; Cramer's V Indicator

JEL Classification: C10; H50; M49

Acknowledgements and Funding: The authors received no direct funding for this research.

Contribution: The authors contributed equally to this research.

DOI: <https://doi.org/10.21003/ea.V183-09>

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Облік за методом нарахування та реформи державних фінансів в Угорщині: дослідження застосування в державному секторі

Анотація. *Вступ.* В останні десятиліття все більше уваги надається потребі вимірювати результати діяльності державного сектора в країнах пострадянського регіону, включаючи Угорщину. Облік за методом нарахування, прийнятий в Угорщині в 2014 році за рекомендацією Європейського Союзу, забезпечує осіб, які приймають рішення, надійною інформацією й одночасно підвищує прозорість витрат.

Мета й методи. У цьому дослідженні основна увага приділяється впливу й синергізму паралельних комплексних реформ у сфері державних фінансів і впровадженню системи обліку за методом нарахування. Ми провели емпіричне дослідження серед 2425 бюджетних організацій (в період з червня 2018 по січень 2019 року) і проаналізували кореляцію між змінними за допомогою крос-табличного аналізу. Наше дослідження охопило 19,1% всіх бюджетних організацій Угорщини. Таким чином, завдяки розміру вибірки аналіз результатів опитування дає повне уявлення про ситуацію в країні в цілому на основі реальних відгуків про впровадження нових практик.

Отримані результати. В ході опитування організаціям було запропоновано описати, як на них вплинув перехід на нову систему бухгалтерського обліку, як вони підготувалися до законодавчих змін і дотримання вимог, які додаткові завдання слід було виконати для впровадження нової системи, і як вони оцінили вплив застосування методу нарахування через п'ять років. У ході дослідження основна увага приділялася впливу нової системи обліку за методом нарахування на управління справами даної організації і, отже, на ефективне використання державних коштів.

Результати підтверджують, що історичне тло й особливості управління державними коштами в країні також повинні бути прийнятні до уваги при прийнятті реформ, а також ретельна підготовка. Наше дослідження проливає світло на той факт, що успішне впровадження обліку за методом нарахування в 2014 р. змогло в повній мірі досягти своєї мети в середовищі, що забезпечується комплексними реформами державних фінансів і законами, прийнятими після 2010 р. Іншими словами, попередньою умовою введення в дію нових правил обліку за методом нарахування, що застосовуються в державному секторі, є посилення процедур бюджетного регулювання й контролю.

Висновок. У дослідженні повідомляється про більш сприятливі процедури в державному секторі, доводиться, що впровадження обліку за методом нарахування було виправданим, і тепер більша увага приділяється продуктивності й ефективності, що досягається за допомогою обліку за методом нарахування.

Ключові слова: облік за методом нарахування; державний сектор; Угорщина; реформи державних фінансів; державні фонди; бюджетне регулювання й контроль; продуктивність; відповідність (комплаєнс); організація; крос-табличний аналіз; V-індикатор Крамера.

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Учет по методу начисления и реформы государственных финансов в Венгрии: исследование применения в государственном секторе

Аннотация. *Введение.* В последние десятилетия все больше внимания уделяется растущей потребности измерять результаты деятельности государственного сектора в странах постсоветского региона, включая Венгрию. Учет по методу начисления, принятый в Венгрии в 2014 году по рекомендации Европейского Союза, обеспечивает лиц, принимающих решения, надежной информацией и одновременно повышает прозрачность расходов.

Цель и методы. В этом исследовании основное внимание уделяется влиянию и синергизму параллельных комплексных реформ в сфере государственных финансов и внедрения системы учета по методу начисления. Мы провели эмпирическое исследование среди 2425 бюджетных организаций

(в период с июня 2018 г. по январь 2019 г.) и проанализировали корреляцию между переменными с помощью кросс-табличного анализа. Наше исследование охватило 19,1% всех бюджетных организаций Венгрии. Таким образом, благодаря размеру выборки анализ результатов опроса дает полное представление о ситуации в стране в целом на основе реальных отзывов о внедрении новых практик.

Полученные результаты. В ходе опроса организациям было предложено описать, как на них повлиял переход на новую систему бухгалтерского учета, как они подготовились к законодательным изменениям и соблюдению требований, какие дополнительные задачи потребовало от них внедрение новой системы, и как они оценили влияние применения метода начисления через пять лет. В ходе исследования основное внимание уделялось влиянию этой новой системы учета по методу начисления на управление делами данной организации и, следовательно, на эффективное использование государственных средств.

Результаты подтверждают, что исторический фон и особенности управления государственными средствами в стране также должны быть приняты во внимание при принятии реформ наряду с тщательной подготовкой. Наше исследование проливает свет на тот факт, что успешное внедрение учета по методу начисления в 2014 г. смогло в полной мере достичь своей цели в среде, обеспечиваемой комплексными реформами государственных финансов и законами, принятыми после 2010 г. Другими словами, предварительным условием введения в действие новых правил учета по методу начисления, применяемых в государственном секторе, является усиление процедур бюджетного регулирования и контроля.

Заключение. В исследовании сообщается о более благоприятных процедурах в государственном секторе, доказывається, что внедрение учета по методу начисления было оправдано, и что большее внимание уделяется производительности и эффективности, достигаемой посредством учета по методу начисления.

Ключевые слова: учет по методу начисления; государственный сектор; Венгрия; реформы государственных финансов; государственные фонды; бюджетное регулирование и контроль; продуктивность; соответствие (комплаенс); организация; кросс-табличный анализ; V-индикатор Крамера.

1. Introduction

After the change of regime, Hungary's transition to a market economy was impeded by the massive government debt (USD 21 billion) and by the obsolete production patterns and approach inherited from the period of the centrally planned economy. For this reason, the initial foreign direct investments could only energise the complete economy to a limited extent. All these factors further aggravated budgetary problems and then caused additional increase in public debt both centrally and at the level of local governments. These impacts resulted in liquidity and operational problems for a wide range of public sector organisations (Hegedűs and Zéman, 2016). The clarity of understanding was hindered by the fact that up to 2014, the Hungarian budgetary institutions had applied an accounting system different from the general practice of the European Union, despite the fact that after an integration procedure of nearly fifteen years, in 2004 the country became a full member of the European Union.

As a result of the statutory changes performed and comprehensive public finance reforms adopted within the scope of national competence since 2010, Hungary's financial position have been constantly improving. Moreover, since 2013 (when Hungary was released from the European Union's Excessive Deficit Procedure), the consolidated budget has been contributing to the conditions of long-term economic growth, and simultaneously ensures maintenance of the macro-economic balance (Matolcsy & Palotai, 2019). As, however, parallel with changes in the overall statutory environment, transparency needed to be improved in public finances and assets, a new accounting system based on the accrual method was adopted for public finances.

The design of our study is based on the interactive model of research design, consisting of five core elements: the research question itself playing a central role, interacting with the purposes of the study, the conceptual framework of it, affecting the methods and validity. (Maxwell and Loomis, 2003) This study examines the procedure of transposing the accrual accounting applied in the European Union's constitution-based system into Hungary, a country in the post-soviet region; and any resulting improvement in the public sector. Thus, the theoretical framework of our study is the changes in the accounting systems - applying it specifically to the public sector.

In our study, our main research question is: What are the effects and connections of the consecutive public finance reforms and accounting system changes implemented in Hungary? We intend to focus on these two triggering events (finance and accounting reforms) individually as well as looking for the connection and correlation between the two as well. Our presumption is that these two changes reinforce each other and lead to much more efficient operation in public

finances. Our main goal is to enlighten the correlation between the comprehensive reforms in public finances and the new accounting system based on the accrual method. The statistical method applied in our research to reveal the correlation will be cross-table analysis, for which the data have been gathered through 2425 surveys (consisting questions measured on nominal Likert scales) among Hungarian budget organizations.

We are focusing on Hungary, as not only a new accounting system has been implemented, but it was preceded by comprehensive reforms within national competence in public finances after 2010. Thus, we have the opportunity to look for any connection between the two. The statutory amendments adjusting accounting to the relevant practice of the EU entered into force on 1 January 2014. The impacts of these two main action packages on fiscal processes and their likely synergies are a worthy research area to analyse. Also, there exists no such papers about the impacts of these reforms in Hungary, thus this study will contribute and fit to the existing literature. However, other EU members have been already analysed in the context of adopting the accrual method of accounting.

We consider our study contributing to the existing literature, as it designs a new approach for evaluating transitions to accrual-based accounting. Our concept of assessing the adoption of accrual-based accounting also considers other factors such as the impacts of comprehensive public finance reforms. Although it is worth noting that these other affecting factors should vary in different countries, as these public finance reforms were the specialties of the Hungarian history. Thus, we encourage our fellow researchers to take other factors into consideration when performing such a research, as we have successfully detected stronger than medium connection between our considered variables.

The structure of our study starts with a literature review on the public finance information system of the European Union, followed by an overview on public finances in Hungary before and after 2014 and the technical adoption of accrual accounting in Hungary. After that, we clearly indicate the purpose of our study. In the results section, we introduce our methodology in detail, and present the results of our analysis. In the last section we draw our conclusions from the study with some implications on future research possibilities.

2. Brief Literature Review

The literature review of our study starts with the accounting reforms performed in the European Union, so we can compare it to the required reforms in the Hungarian accounting system in the public sector recommended by the European Union. Afterwards we are focusing on the previous Hungarian accounting systems deficiencies and the specialties of the Hungarian macroeconomic environment.

In the nearly two decades of market transition that preceded the 2007-2008 world economic crisis, Hungary was characterised by an inefficient fiscal policy, non-transparent budget management, and feeble state regulation and control. By 2006, the country's operation had become unsustainable, and the 2007-2008 crisis further aggravated the situation. It is worth looking at Lentner et al. (2018) for a detailed analysis of the Hungarian reforms, but shortly, as a result, a reform was required in state operation and public finances (Lentner, 2018), and in the spirit of methodological pluralism (Csaba, 2018), good international practices needed to be applied adjusted to the national specificities.

The international experiences and literature references confirm that during economic transformation the political, social and legal features of the given country should be taken into account. In this study we are focusing on the effects of the change in the accounting method and parallel reforms in the public finances, it is also worth looking at other aspects such as sustainability (Falcone, Lopolito, & Sica, 2017), employment and procurement (Gugler, Weichselbaumer, & Zulehner, 2020), environmental practices (Seles et al., 2019) or fiscal policy decision making (Christofzik, 2019).

According to Ramady (2010), any economic reform is successful if it is based on the particular country's legal and regulatory framework and ensures an optimum distribution of the resources required for the society. Improvement in both financial and non-financial institutions is indispensable for government expenditures and the efficient use of public funds. According to Diamond (2003), strategic budget planning, refashioning the existing programmes, improvement in the fiscal system and the adoption of a system of accountability and fiscal incentives are indispensable prerequisites for the success of reforms. Running the appropriate budgetary institutions is

important for the efficient implementation of the fiscal policy (Aidt et al., 2008). While Olena (2015) is emphasising the importance of state financial control in the public sector, Meiss et al. (2018) adds that by improving that financial control, a country can also successfully react to risks.

The statutory consistency ensured the transposition of Council directive 2011/85/EU (on requirements for budgetary frameworks in the Member States) into the Hungarian legislation. Thus, the government acted within the scope of its duties determined in Act No. C of 2008 on Accounting, Act No. CVI of 2007 on State Assets, Act No. LXXXVII of 2010 on the National Land Fund and Act No. CXCV of 2011 on Public Finances, and based on Article 15 (1) of the Fundamental Law when it enacted Government Decree No. 4/2013. (I. 11.) on the Accounting of Public Finances with effect from 1 January 2014. The mentioned government decree was related to two other ones decreed by the Ministry for the National Economy (NGM) to lay down the requirements and duties related to the adoption of the new kind of accrual accounting in public finances. These two decrees contain the rules of compiling adjusting balance sheets. Thus Government Decree No. 36/2013. (IX. 13.) NGM of the Minister for the National Economy on the duties related to the 2014 amendments to the accounting of public finances and Government Decree No. 38/2013. (IX. 19.) NGM of the Minister for the National Economy determining the methods of invoice processing and account selection prevail. The purpose of accounting in public finances was to set up a more unified and transparent system in Hungary. Particular relevance was lent to the transposition by the European Commission's Report to the Council and the European Parliament (Report, COM (2013) 114 final) about implementing harmonised public sector accounting standards in Member States and about the suitability of IPSAS for the Member States.

Due to size limitations, our study will not detail the advantages and disadvantages of the accrual accounting method in the public sector, although for such a purpose it is worth looking at Tiron & Mutiu (1990), Bunea-Bontas & Petre (2009), or Carnegie & West (2003) as a good starting point. Shortly, the most significant drawback of the cash approach is that the financial position of the particular budgetary organisation cannot be determined precisely, and the total amount of actual costs cannot be established adequately either. Modern budget approach, however, requires more than the information provided in a cash system. The efficient and appropriate management of scarce public funds requires a system of records and information that allows the establishment of profitability and highlights the cost approach, especially the cost price of public services (Blöndal, 2003).

Other studies also focused on the transition to the accrual-based accounting method with its impacts as well (Dabbicco, 2015; Cuadrado-Ballesteros et al., 2019; Bunea-Bontas and Petre, 2009; Deaconu et al, 2011). According to Cuadrado-Ballesteros et al. (2019), implementing accounting reforms has the potential to reduce corruption. Bunea-Bontas and Petre (2009) states that transitioning to the accrual-based accounting method facilitates better planning and financial control in the public sector, and also fosters efficient and successful public finance management.

2.1. Literature overview on the public finance information system of the European Union

In the decade past, numerous European countries adopted accrual accounting (Harsányi et al., 2016). The implementation of the reforms and changes adopted as a result of the spread of the New Public Management paradigm was indispensable, as the cash approach focuses mostly on the financial settlement of transactions, and as it is limited in considering efficient and successful business management, change in the method of accounting was of paramount significance. We conducted a thorough review on the literature on the features of accounting methods applied in the European Union, and summarized the results in [Table 1](#) (Bisogno et al., 2019; Brusca et al., 2015; Rossi et al., 2016; Oulasvirta, 2014; Deloitte, 2013; E&Y, 2012; PwC, 2013; Anessi-Pessina & Steccolini, 2007; Bellanca & Vandernoot, 2014; Muckuté, 2013; Măciucă, 2013; Tudor & Mutiu, 2006; Bellanca et al., 2015; Rossi & Trequattrini, 2011; Jovanovic, 2015; Jovanovic, 2019; Rainero et al., 2013; Steger, 2013; Mason, 2014; Kranecová, 2015).

Based on the literature review, the conclusion arises that during the adoption, and then the application of the EU's accounting regulations, the host and the application environments are different each case and thus some adjustment in the enforcement of rules-based legislation is justified. It is important for the information system of public sector accounting to adjust to the economic features of the given country, to the local needs, and to the historical specificities. It is essential for the change and the adopted new system to facilitate the efficient and transparent operation

Table 1:
Summary of the EU members' accounting policies as of 2019

		Central level		
		<i>Modified cash accounting</i>	<i>Accrual accounting</i>	<i>Modified accrual accounting</i>
Local level	<i>Modified cash accounting</i>	Luxembourg Italy Slovenia	Austria	
	<i>Accrual accounting</i>	Greece Ireland Germany Portugal Cyprus Netherlands	Bulgaria Czech Republic United Kingdom Estonia France Poland Lithuania Romania Spain Sweden Malta	
	<i>Modified accrual accounting</i>	Finland		Croatia Latvia Hungary Slovakia Belgium (mostly)

Source: Compiled by the authors

of the central and local governments in the country. A carefully selected system should obviously be progressive and should follow the international trend.

The following chapter describes the Hungarian environment that serves as a forum for the inclusion of the new accounting regime, i.e. the public sector that has adopted it.

2.2. The context of changes: public finances in Hungary before and after 2014

When the conditions of adopting accrual accounting meeting the expectations of the European Union, reference should be made to Hungary's positions and the characteristic features of the host environment before 1 January 2014. In the 1980's Hungary's economy started to follow the market model. According the research conducted by Mihályi and Szelényi, the transitional system was characterised by massive paternalistic effects (Mihályi & Szelényi, 2017). The welfare functions transferred from a socialist planned economy to a system following the Western pattern, and irresponsible budget policy considerably weakened the country's situation, escalated by inefficient and lenient control. In a description by Veress (2007), in the country that was granted full membership in the European Union in 2004, economic policy could not authentically express its expectations, it had no clear priorities, and even the European Union had no opportunity to familiarise itself with the genuine Hungarian positions.

The constantly feeble budgetary situation and the crisis that erupted in 2007-2008 led to the need to take loans in the amount of USD 25 billion from IMF, WB and ECB to maintain Hungary's operability (Lentner, 2015a). From the beginning of effective consolidation, the comprehensive public finance acts adopted after the summer of 2010 set the objective to restore the Hungarian economy's ability to develop. After 2010 various economy development and public administration improvement initiatives were implemented in financial and public sector administration, while the government's influence and control over the economy increased. Several authors consider the government's influence on the economy excessive (Csaba, 2019, Chikán et al., 2018), but the authors of this analysis do not disapprove it.

The first step in the general renewal of public finances was the approval of the Fundamental Law, which entered into force on 1 January 2012. The passing of the Fundamental Law, the wide range of related new acts regulating public finances, and the underlying political and moral commitment enabled the stabilisation of Hungary's central budget, and as a result, the debts of local governments could be consolidated, the social insurance system was reformed, public finance control was renewed and the fiscal policy was refashioned (Molnár & Hegedűs, 2018). These far-fledged reforms were underpinned by massive political legitimation, which has remained uninterrupted since 2010. After 2013, the objective set for and the implements used by the central bank's policy were both expanded and focussed on financial stability and economic growth, in addition to the retention of the classical inflation moderation targets. As a result of fiscal and monetary changes, economic growth and the financial equilibrium have been simultaneously characterising the

Hungarian economy since 2013 (Lentner, 2015b). In a democratic society the efficient, lawful and transparent management of public funds is expected. In order to manage public funds efficiently and transparently, the entire public sector must comply with the rules and basic principles of business management (Kolozsi et al., 2018). Nevertheless, accrual accounting, suitable for a more efficient understanding of fiscal trends, was not adopted before 2014.

By derogation from the previous regulation, as the currently effective Act CXCV of 2011 on Public Finances (hereinafter: PFA) is based on constitutional rules, it does not specify the basic principles governing public finance management, however, these requirements can be deduced from both the Fundamental Law and content of other acts on various financial matters. The various legal sources stipulate the procedural rules and codes of conduct related to budget compilation and reconciliation, as well as the method of accounting financial flows. Consequently, public sector accrual accounting was adopted on 1 January 2014 in a «fertile» and inclusive environment.

2.3. The technical adoption of accrual accounting in Hungary

Due to the New Public Management reforms of the 1980's, the techniques applied in the private sector also appeared in the management of public funds, with focus on the creation of a more efficiently and successfully operating public sector. In addition to numerous OECD member states, Hungary also determined to adopt accrual accounting in the entire public sector, as it fitted well in this theoretical framework, which was moreover expressly encouraged by Directive 2011/85/EU of the Council.

Government Decree No. 4/2013. (I. 11.) on Public Sector Accounting requires the application of the basic principles of public sector accounting and sets out the rules governing the reporting obligation and bookkeeping. As a result of the reform of public sector accounting, fiscal accounting was separated from financial accounting; the reporting obligation was changed, and so the reporting system became more efficient. As a result of the new accounting system, the margin of manoeuvre for reconciliation by public sector entities was increased, and simultaneously, the audit of compliance in business management was expanded in the interest of effectiveness.

Based on all this, public sector entities are also expected to efficiently and prudently manage their businesses within the framework of Hungary's statutes. The budget publicity principle requires all public sector organisations to give public account of the management of public assets. Article 39 (2) of the Fundamental Law provides that public funds and national assets must be managed according to the principles of transparency and the purity of public life. It should be noted, however, that suitability for «social» control alone does not satisfy the technical requirements of verifiability, as the latter requires the operation of a properly public sector control infrastructure that prevents the inexpedient or uneconomical use of public funds. In the various parts of the public sector, business management must be performed on the basis of a budget. In Hungary the fiscal year corresponds to the calendar year. As a result of the crisis, in addition to business entities traditionally operating on market bases, the accounting principle of going concern was also considerably appreciated in public sector organisations (Zéman & Lentner, 2018). This basic principle is of paramount significance in the case of public sector businesses, among others, because the termination of an activity may infringe upon strong social interests and prevent the subsequent performance of a public duty.

As a result of accession to the European Union, the principle of public sector programming appeared in Hungary. Statutory changes enabled, and moreover, mandatorily required undertaking long-term commitments beyond the annual budget in relation to the use of funds provided by the European Union and to various programmes of the Hungarian government. In Hungary Act C of 2000 on Accounting stipulates the principles of full disclosure and of giving a true and fair view, which also apply to public sector organisations. These require an organisation to disclose information on all funds flows in the public sector subsystems, to earmark and use the appropriations in each case for the actually intended purposes, and to record them in the books and statements in a way that enables outsiders to identify them in reality.

The principles of consistency and transparency means that as the state regulates budgetary transactions in a single statute, expenditures and revenues are recognised together, facilitating the full understanding of public sector funds management. Based on the principle of universality, the expenditure and revenue appropriations are incompatible, there is no direct correlation between them, and in the aggregate, budget revenues fail to cover the budget expenditures. Budgetary revenues cannot be offset against budgetary expenses; they must be recognised in the

budget and in the annual discharge report without offsetting. In the budget the individual appropriations must be planned, submitted, approved and reconciled in detail. Based on the principle of detail, the revenues and expenditures intended by the decision-maker are collected and spent. In the case of public sector funds management, important considerations include the agreement between revenues and expenditures, the various interest harmonisations, the maintenance of a balance and the prevention of the inefficient use of funds their use for unintended purposes by control mechanisms. In the course of using budgetary funds, the use of funds provided for specific purposes according to the intended purpose must be borne in mind. In Hungary all the public sector organisations are obliged to undertake public procurement procedures when they intend to spend their funds, and pursuant to Article 87 (1) of the Treaty of the European Union, no state aid may be granted to companies if this may distort competition (Lentner, 2015a).

On 1 January 2014, public service organisations adopted accrual accounting. Similarly to the other European countries, a «mixed» application of accrual and cash accounting has characteristically spread in Hungary. In the public sector information system a growing demand for accountability is clearly perceivable. The essence of accountability is the simultaneous representation of statements about the use and the efficiency of using of public funds. One of the main tools of ensuring accountability is the accounting system. The new accounting system enables good governance based on social consensus, efficient business management and the successful performance of public duties. Due to the Hungarian model adopted with the new regulation, a secure public finance system has been implemented, in contrast to the previous financial accounting, which did not allow the accurate assessment of the financial situation. Accrual accounting, on the other hand, requires the recording of each and every financial event, and evaluated their impact. The depreciation of tangible assets is solved and consequently, resource allocation is improved, and as the per-use cost of assets is known, the margin of manoeuvre for asset management increases considerably.

Pursuant to the Public Finance Act (Act CXCV of 2011 on Public Finances), the public finance information system must facilitate the planning of public sector financial procedures, the allocation of appropriations, the implementation of the Budget Act and the audit of its implementation. For this reason, the information systems of public sector organisations are expected to measure and present public service performance. Additionally, they are expected to provide reliable data as input for business planning, organisation and implementation. Revenues and expenditures must be classified in an administrative, economic and functional breakdown. At the same time, the accounting information system must lay the basis for enabling the giving of a true and fair view, transparent and more modern business management and reporting (Simon, 2013).

The State Audit Office undertook a significant role in the adoption of the accounting reform. Prior to transition to accrual accounting, the State Audit Office participated in conferences and bilateral meetings related to this topic, had a fact-finding role in local governments' difficult to comprehend asset management and simultaneously encouraged the adoption of accrual accounting (Domokos et. al. 2016). In our view, the adoption of accrual accounting was indispensable, as the previous system failed to provide accurate information on public sector and local government finances and did not appropriately reflect changes in assets. In April 2012, the National Association of Local Governments also highlighted the need to change public sector accounting, and urged the adoption of accrual accounting (Bathó, 2012; Pályi, 2015).

The State Audit Office also participated in an international seminar held in Paris in March 2013, at a conference organised with the participation of the experts of audit offices, the European Court of Auditors, the European Commission and EUROSTAT, where the role of the International Public Sector Accounting Standards and the opportunity to set up common European standards were analysed. The significance of this topic was further enhanced by the fact that the adoption of coordinated European accrual accounting standards would enable forecasting and assessment of the budgetary situation, and a comparison of the budget data of the individual Member States. At the bilateral meeting held in the autumn of 2013, the State Audit Office was familiarised with the Swiss experiences and the practice of the Swiss association's discharge audits. In addition to technical consultation, 2014 also saw the release of numerous publications by the State Audit Office on the adoption, methods and eventual risks of the new public sector accounting based on the accrual method (Pályi, 2015).

The Hungarian public sector accounting system adopted in 2014 consists of fiscal and financial accounting. A valid requirement applicable to both subsystems in public sector accounting

includes the compilation of true, regular, closed, lucidly arranged records and statements that give a true and fair view. The chart of accounts for the public sector and the ledgers maintained in the financial statements have been established on the basis of a uniform account allocation and a uniform chart of accounts. The organisations are not allowed to depart from these rules, but they are authorised to break them down. Public sector accounting is based on double-entry bookkeeping and only the revenues and expenditures realised in the fiscal year are recognised in such books, in other words, this is cash accounting. The appropriations and the related accounts receivable or payable as well as other payment liabilities and the reconciliation of the settlement of appropriations are recognised in public sector accounting records.

The purpose of public sector accounting is the measurement of planning and interim developments and ensuring budget implementation and supporting the discharge by evidence. In the Public Finance Act, a pivotal role is assigned to the accounting and regular registration of commitments and other liabilities. Financial accounts also have double entries, however, as bookkeeping is performed by the modified accrual method, the emphasis falls on the costs and expenditures incurred in or affecting the fiscal year and on accrual-based revenues. This has enabled the measurement of the national assets, the performance of the public sector organisation and cost calculation. The income statement compiled of the financial accounting data is based on the principle of accruals and deferrals. The commitment or other payment liability finalised in public sector accounting has been transferred and incorporated into financial accounting.

According to the related decree (providing for transition), every organisation was required to rearrange their statements compiled about the year¹ 2013, and to compile an adjusting balance sheet. For the purposes of the adjusting balance sheet, a full, itemised and verifiable inventory had to be taken of all the assets as at the balance-sheet cut-off date on 31 December 2013. Public sector organisations had to consider scrapping any unperformed capital investments, identify inventory obsolescence on stock, the relevant sales opportunities, and must recognise them in the inventory of accounts receivable, accounts payable and commitments in a breakdown applicable in the given fiscal year and in the years following the given fiscal year. The adjusting balance sheet may only contain entries representing expenditures that affect the immediately following year, or revenues and expenditures that have not affected the public sector organisation. The contingent and temporary entries arising from erroneous payments had to be financially settled, and if this was ruled out, they had to be recognised among accounts receivable and payable, or as revenues or expenditures not affecting the public sector organisation. According to the new Public Finance Act, while making adjusting technical entries, the accounts receivable and payable previously left unrecognised under the 2013 rules had to be included in the balance sheet. During adjustment by technical entries, several book entries had to be derecognised or transferred (e.g. capitalised start-up and restructuring costs, capitalised value of research and development, accounts receivable or payable from prepayments on aid schemes and pre-financing, Molnár and Hegedűs, 2017).

3. Purpose

This study examines the procedure of balancing the Hungarian economic policy, characterised by undisciplined budget management in the period that followed the change of regime, after a period of (nationwide) state consolidation in 2010, and the extent to which clairvoyance and the efficiency of decision-making were improved, especially by the 2014 adoption of accrual accounting. The purpose of this paper is to point out any correlations between the positive results of the applied public finance reforms and the implementation of accrual accounting in the Hungarian public sector.

We presume that the widely applied public finance reforms, and the adoption and application of accrual accounting complemented each other really well, however, if the undisciplined management environment had been maintained along with the absence of consequences after audits, public sector accounting could only fulfil its mission to a lesser extent. And vice versa, the impacts of national public finance reforms could not be measured if the accounting system was not modernised. To verify our assumption, we conducted an empirical survey in a wide scope of Hungarian public sector organisations (institutions) and evaluated it using statistical methods.

¹ Decree No. 36/2013. (IX. 13.) NGM of the Minister for the National Economy

4. Results

4.1. The survey

During the research, we intended to reach out to all Hungarian budget organisations. According to the public register maintained by the Hungarian State Treasury, there are a total of 12,666 budget organisations, from which 706 organisations are reporting to the central government and 11,960 businesses are reporting to local governments. We sent out a written survey to all of the budget organisation's leaders, focusing on the benefits and drawbacks of the newly adopted public sector accounting, and on any improvement in fiscal discipline as a result of the adoption, and also the transition to accrual accounting and the impacts of its application. The surveying period took approximately 6 months in the second half of 2018. At the end, we have got measurable answers from 2425 budget organisations (113 reporting to the central government, and 2,312 reporting to local governments), so our survey covered 19.1 per cent of all the budget organisations. Thus, this analysis gives a comprehensive view of the entire country.

In the course of the survey the organisations were asked to describe how they were affected by the transition to the new accounting system, how they had prepared for the statutory changes and compliance, what additional tasks the adoption of the new system required of them, and how they evaluated the impacts of the application of accrual accounting after five years. The inquiry focussed on the impact this new accrual-based accounting system had on the business management of the given organisation and thus the efficient use of public funds.

The survey consisted of seven statements detailed in [Table 2](#). Respondents evaluated the various topics (statements) on a Likert scale between 1 and 5, marking the extent they have come across and agree them in recent years (1 - strongly disagree, 2 - disagree, 3 - neutral, 4 - agree, 5 - strongly agree). The first and the second statements are related to the results of the implemented changes, while the latter five questions measure the effects on the everyday operations.

Table 2:

The seven statements in the survey

ST1 - The efficiency in the use of public funds has improved as a result of the public finance reform.
ST2 - Public sector budget management has improved as a result of the new accounting method.
ST3 - The adoption of the new accounting method has required additional tasks.
ST4 - The adoption of the new accounting method has required additional costs.
ST5 - Transparency in the use of public funds has improved.
ST6 - The management of public resources has become easier to access.
ST7 - The quality and information content of the statements has improved.

Source: The authors' research

4.2. The applied statistical method

Our study analyses the impact of the public finance reform required for the adoption of the new public sector accounting, including statutory changes, and the expansion of the audit regime promoting compliance, in other words, the wider scope of control discipline on Hungary's economy, budget deficit, and developments in its net financing position. In the course of the survey, the hypothesis was evaluated with the help of a cross-table analysis. A Chi² test was applied to establish correlation, and the closeness of the relationship was checked by the Cramer's V indicator. The tests required for the analysis were conducted by the SPSS program package.

The cross-table analysis is used to analyse categorical (nominal measurement scale) data. Our main goal is to provide information on the relationship between the results of the public finance reform, the implementation of the new accounting method and the everyday operations of the budget organisations. Our assumption is that there are evincible positive relationships between the above-mentioned reforms and the ease of everyday operations.

As mentioned before, the first and the second statements of the survey were related to the results of the implemented changes, so these variables were compared the all the other variables. In every dimensions of the cross-table analyses the values of the variables were the five different (Likert scale) answers to the statements.

First, we applied the cross-table analysis to these statements:

- ST1 - ST2
- ST1 - ST5
- ST1 - ST6
- ST1 - ST7

Secondly, we applied the cross-table analysis to these statements:

- ST2 - ST3
- ST2 - ST4
- ST2 - ST5
- ST2 - ST6
- ST2 - ST7

4.3. Findings

An analysis of the variables reveals that a considerable ratio of the respondent organisations, namely 73.5 per cent, was positive about the improvement in transparency and 90.3 per cent had a favourable opinion on improvement in the efficiency of using public funds and on control. Respondents thought that resource management had improved by 83.4 per cent and public finance management by 81.5 per cent. Based on this, the respondents preferred the positive domains, and consequently, the responses are not evenly distributed on a scale of 5. This concludes that the respondents' responses may not be considered random.

The surveys confirmed that every change was time-consuming and required high costs; however, these costs were subsequently recovered. A key factor to have a major impact on the success of conversion to accrual accounting was the fact that the general public finance and political conditions, including demand for change and commitment to altering accounting, had already been in place. Similarly to other countries, in Hungary the reform of public sector accounting required public sector organisations, as well as their supervisory authority, the State Audit Office, to perform numerous additional duties. Public sector actors had to familiarise themselves with the statutory changes and the technical conditions of accounting applications. This learning procedure was facilitated by the Hungarian State Treasury and the Ministry for the National Economy. However, in the first year the State Audit Office took the time required for conversion to the new system into account, and reckoned with a grace period of a year, without penalising public sector organisation for statements submitted with a delay.

4.3.1. Results of the cross-table analyses

The interrelationship between the variables (statements) presented in Table 2 were evaluated by using the first two statements as target variables. One of the target variables (ST1) was the impact of overall public finance reforms performed within national competence (Table 3), and the other target variable (ST2) was the improvement in public sector budget management (Table 4). The tables depict the correlations between the variables.

The reforms approved in a national competence represent the reform of public finance regulation, which includes the transfer of rules-based practices and the transformation of the regulations

Table 3:

A cross-table analysis of the impacts of comprehensive public finance reforms performed in national competence (ST1)

Improvement in budget management (ST2)		Value	Approx. Sig.
	Cramer's V	.597	.000
	Contingency Coefficient	.590	.000
N of Valid Cases		2425	
Improvement in the transparency of public funds (ST5)		Value	Approx. Sig.
	Cramer's V	.662	.000
	Contingency Coefficient	.587	.000
N of Valid Cases		2425	
Improvement in the management of resources (ST6)		Value	Approx. Sig.
	Cramer's V	.590	.000
	Contingency Coefficient	.700	.000
N of Valid Cases		2425	
Improvement in the quality of reports (ST7)		Value	Approx. Sig.
	Cramer's V	.552	.000
	Contingency Coefficient	.555	.000
N of Valid Cases		2425	

Source: The authors' research

applicable to business management in public finance. Consequently, the reform affected operative and strategic operation alike.

The statistical analysis of the responses revealed that the variable of comprehensive public finance reforms performed in a national competence, in other words, the more efficient use of public funds (ST1), which results from the said public finance reforms, correlates with conversion to the new public sector accounting method in terms of performance. The variables representing improvement in budget management (ST2), in the transparency of resource management (ST5), in management of resources (ST6), and in the quality of statements (ST7) have stronger-than-medium correlations with the variable representing public finance reforms, as the values of Cramer's V indicators exceed 0.5, the measure of correlation strength (in the indicators quoted, the correlation strength is considered as weaker than medium below 0.5; stronger than medium above 0.5; and strong above 0.7 (Sajtos & Mitev, 2007)). In cases not included in the table (ST1's correlation with ST3 and ST4), the variables did not show any correlation during the statistical test with the comprehensive public finance reforms performed in a national competence (Table 3).

The improvement on budget management variable (ST2) is meant to analyse the operative impacts of reforms. This includes the public sector reform and the attributes of operation that affected business management.

Table 4 shows that a stronger than medium correlation can be detected between improvement in public budget management resulting from changes in the accounting method (ST2) and the variable representing transparency in public finances (ST5), as the values of Cramer's V indicators exceed 0.5. A similar finding was obtained in relation to the quality of statements (ST7), suggesting that although the public finance reform caused additional costs (ST4), they were recovered as a result of improvement in business management. The strength of the correlation with improvement in public sector resource management (ST6) and with the additional duties caused by the accounting record is weaker than medium (ST3).

Based on the two cross-table analyses summarized in Table 5, it can be established that the change implemented in 2014 in accounting and the wide public finance reform performed in a national competence after 2010 have had a stronger than medium impact on the efficiency of using public funds, and have had a similarly strong impact on increase in transparency. The public finance reform package undertaken in a national competence and the changes in accounting, performed in 2014 in response to the EU's expectation caused synergies, as the stronger than medium relationship between ST1 and ST2 occurred.

Table 4:
A cross-table analysis of the impacts of changes in budget management (ST2)

Additional tasks were required (ST3)		Value	Approx. Sig.
	Cramer's V	.236	.000
	Contingency Coefficient	.317	.000
N of Valid Cases		2425	
Additional costs were required (ST4)		Value	Approx. Sig.
	Cramer's V	.472	.000
	Contingency Coefficient	.555	.000
N of Valid Cases		2425	
Improvement in transparency in public finances (ST5)		Value	Approx. Sig.
	Cramer's V	.567	.000
	Contingency Coefficient	.353	.000
N of Valid Cases		2425	
Improvement in the management of resources (ST6)		Value	Approx. Sig.
	Cramer's V	.434	.000
	Contingency Coefficient	.523	.000
N of Valid Cases		2425	
Improvement in the quality of reports (ST7)		Value	Approx. Sig.
	Cramer's V	.519	.000
	Contingency Coefficient	.412	.000
N of Valid Cases		2425	

Source: The authors' research

Table 5:
Summary of the correlations between the seven statements

	ST2	ST3	ST4	ST5	ST6	ST7
ST1	Stronger than medium	-	-	Stronger than medium	Stronger than medium	Stronger than medium
ST2	-	-	Weaker than medium	Stronger than medium	Weaker than medium	Stronger than medium

Source: The authors' research

The data clearly reveal that in general, the public finance reforms performed in national competence have changed the framework of operation, while the operative management was improved as a result of the accounting reform in relation to the quality of statements, resource management and transparency. The direct impact of these factors is more marked as it has a more powerful effect on daily operation.

4.3.2. Additional observations

In the opinion of the leaders of the surveyed budget organisations, switching to the new accrual accounting method naturally required additional duties (familiarisation with the new statutes, compilation of adjusting balance sheets and the transfer of book entries) as well as additional costs (participation in consultations, conferences, training courses, the adoption of new accounting software, building new IT infrastructure). However, aside from such additional duties, the new accounting system also offered numerous benefits, and ultimately, over the course of years, the initial costs have been already recovered. In public finances the books have become up-to-date, and moreover, the classifications have been rearranged, and the use of appropriations complies with the relevant requirements. The appropriations disposable by public sector organisations are traceable on a regular basis on the appropriation account maintained by the Hungarian State Treasury for monitoring use. Based on all this, the appropriation account maintained by the Hungarian State Treasury and the books of public sector organisations continuously match throughout the year, and thus no unidentifiable revenue or expenditure entries, contingent or temporary entries are left by the end of the year.

In general, it can be established that the new accounting method demands tight deadlines and no entries may be booked in the system without appropriations. On the basis of appropriations, developments in organisations' management can be monitored on an uninterrupted basis. In addition to the generation of new reports, the new system also places the organisations' efforts at improving the quality of information generation in focus (Figure 1).

It is important to emphasise that the global financial crisis had a major impact on the Hungarian economy and revved up the renewal of public finances as well as the adoption of an accounting system suitable for measuring the efficiency of using public funds. Prior to the financial crisis, the Hungarian fiscal policy had been characterised by wanton overruns, and control were absent from the economy as well as transparency was missing. The high headline government deficit, representing around 8 per cent, and the net external financing requirement of about 8 per cent, recorded between 2002 and 2006, was unsustainable over the long term (Figure 2).

As a result of the public finance reforms adopted after 2010, including the tightening of controls and discipline, the Hungarian economy is now on a growth trajectory suitable for maintaining balance. After 2010, the headline government deficit decreased, and the net financing position of the economy has been improving. Within this framework, the application of accrual accounting ensures transparency in public services and business management, as confirmed by 95 per cent of the respondents included in the analysis.

5. Conclusions

The appropriate operation of the economy requires adequate and objective information for the public sector and for market participants about the current financial and income situation of and developments in businesses and non-profit organisation, other organisations, public sector

entities. These pieces of information are indispensable for making decisions by the market and public sector participants. Similarly to for-profit businesses active in markets, public sector entities are also expected to act on the principle of going concern, in other words, to prevent the termination or major reduction of business activity in the future. However, events, political decisions and regulatory circumstances that prevent a public service organisation from financing its activity, and risk going concern. The adoption of accrual accounting in the public sector helps preventing such cases.

In Hungarian public finances the provision of reliable and true information has considerably been appreciated, and thus demand for conversion to accrual accounting and for the elaboration of performance-based accounting have become emphatic. Based on all these, as a result of the research, the following findings were established in relation to transition to accrual accounting preceded by comprehensive public finance reforms:

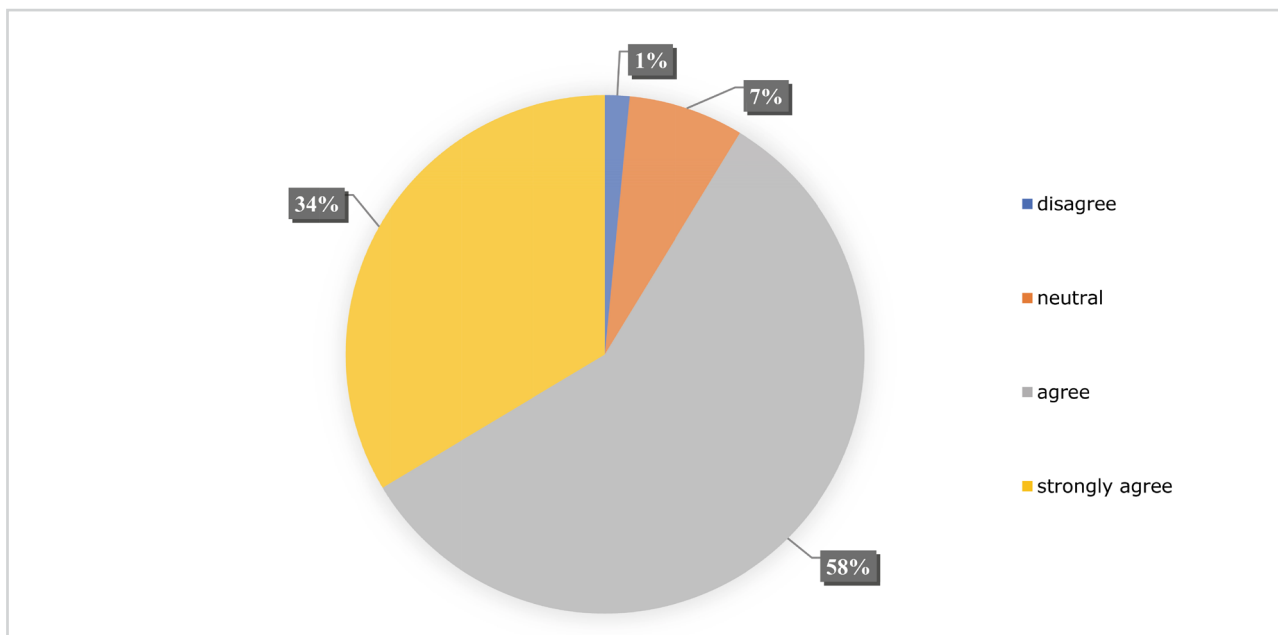


Figure 1:
Distribution of responses to the question on improvement in the quality of reports (ST7)
Source: The authors' research

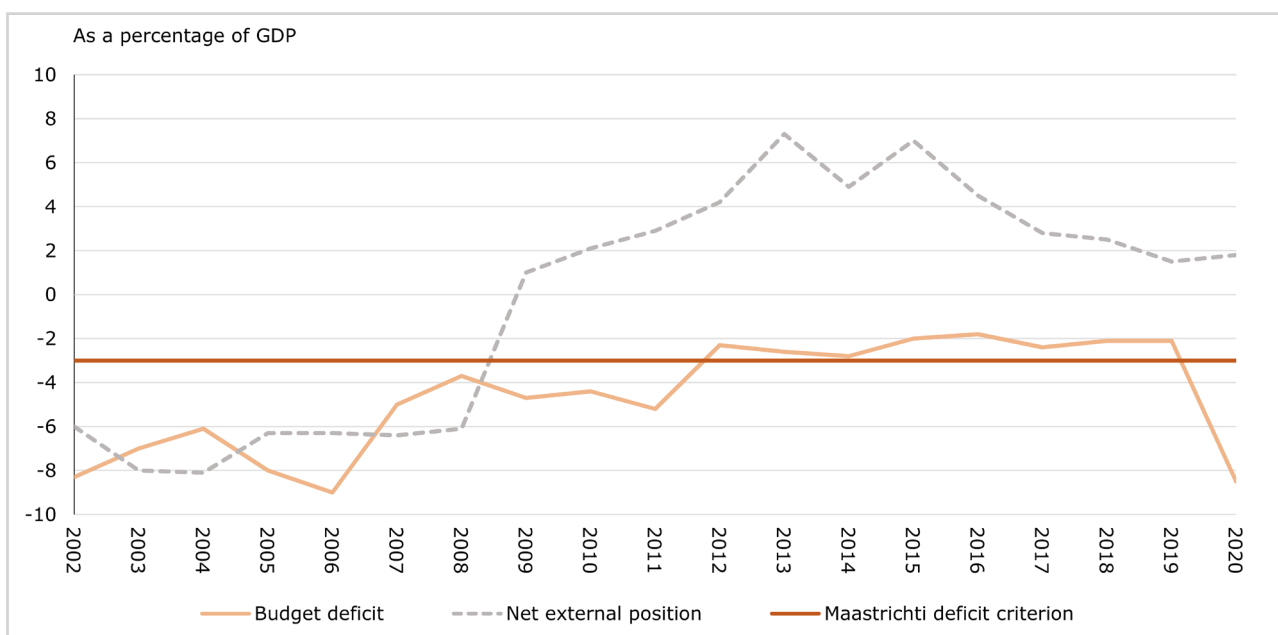


Figure 2:
Government deficit and the net financing position of the national economy
Source: National Bank of Hungary (2020), Eurostat (2020)

- the efficiency of business management has improved and has become more transparent, while accountability has also improved;
- the management of public funds is more efficient, and decision-making is more successful as a result of better information;
- the conditions required for the assessment of accountability and transparency in the audits performed by the State Audit Office have improved;
- financial control has become more efficient as a result of accrual accounting;
- the standard of reports has been improving year by year;
- the application of accrual accounting in the public sector was only successful in concert with broad reforms in public finance.

Accrual accounting gives a full view of statements of assets and liabilities and ensures an analytical approach to accounting entries. Due to the financial statements, it provides an overview of the organization's assets for several years. The new accounting system serves higher efficiency in business management, a more lucid, successful and uniform financial control, and the mitigation of the risk of errors. However, increase in this standardisation, transparency and control could not have been implemented without reconsidering and transforming the complete public finance management and its legislation. Although more stringent regulations were also available in Hungary prior to 2010, the enforcement of compliance failed to achieve the appropriate results, in other words, the problems of operation and business management risks were due to the absence of discipline in business management and to reduced transparency.

Our statistical analyses proved that the improvement in business management, perceived by public sector organisations, was in part due to the change in accounting, as a stronger-than-medium correlations with the improvement in the quality of financial statements, increase in the transparency of public finances and in efficient resource management were revealed. At the same time, the comprehensive public finance reform performed in national competence had a more pronounced effect upon the favourable development (in other words, on the improvement of transparency in public finances, in the quality of reports and in the management of resources), confirmed by the existence of a stronger-than-medium correlation.

The conclusion can be drawn that the regulatory reform of public finances and the change in public sector accounting had a combined contribution to the improvement in public sector funds management, as these are the two factors with the most powerful influence. An analysis of the strength of this correlation reveals that based on the values of Cramer's V indicators, in the respondents' assessment, the reform of public finance regulation had the greatest impact on improvement in public finance management, however, without the application of accrual accounting, adopted at the EU's recommendation, it could not have its impact fully felt.

As mentioned in the literature review, lots of EU members have already adopted accrual accounting both on local and central levels. A further investigation would be necessary to compare the results from the Hungarian changes with other EU members' transition to the new accounting system. This research should also take into consideration whether there were also reforms implemented at the same time in public finance regulation. Thus, it could validate the combined effects of these changes. Fortunately, there are several existing studies focusing on specific countries both on central and local levels in the aspects of using accrual accounting: it is worth looking at Paulsson (2006), Deaconu et al. (2011), Peter Van Der Hoek (2005) as a starting point for conducting such a research.

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Received 1.02.2020

Received in revised form 20.02.2020

Accepted 26.02.2020

Available online 4.06.2020