

The impact of accounting regulation basis to the mandatory biological assets reporting: evidence from the Serbian agricultural production companies

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Abstract

The aim of this paper is to analyze the quality of biological assets disclosure among the agricultural production companies which are implemented IAS 41 and IFRS for SMEs. The research is based on the sample of 200 observations of financial statements of agricultural companies during the period 2016 – 2020. The level of the quality of biological assets reporting is measured by the quality index. The impact of independent factors such as enterprise size, biological assets intensity, current ratio, profitability, leverage and accounting regulation on the quality of biological assets reporting is measured by using regression analysis. The results indicate that there is significant difference in the level of biological assets disclosures between the companies which are implemented IAS 41 and IFRS for SMEs. Furthermore, the findings indicate that the enterprise size, profitability and accounting regulation basis have significant positive impact on the level of disclosure information about

biological assets. According to this, larger enterprises, enterprises with the higher level of profitability and enterprises which adopted IAS 41 have the higher quality of biological assets disclosure.

Keywords: IAS 41. IFRS for SMEs. Biological assets reporting. Financial statements.

1. Introduction

Accounting of the agricultural sector had little attention from researchers before the implementation of International Accounting Standards 41 – Agriculture (IAS 41) (Goncalves, Lopes, 2014; Fisher, Marsh, 2013). Now, almost two decades after introduction of IAS 41, there is interest of researchers and regulators of accounting standards for some topics in agricultural accounting as: controversies of measurement at fair value (Arbidane et al. 2018; Barker and Schulte 2017; Goncalves et al. 2017), extended classification of the biological assets (Arbidane and Mietule 2018), impact of biological assets measurement on financial position and performance (Ruben and Abel 2021; Bohusova and Svoboda, 2017), quality of biological assets disclosures on comparability of financial statements (Baigrie and Coetsee, 2016), and, the costs and benefits of measuring and reporting biological assets at fair value (Marques, 2021; Garcia and Morales, 2021; Bohusova and Svoboda, 2016; Silva et al, 2015; Elad, 2004).

Continuous analysis of the business performances from various internal and external factors is a key element for the development of entities (see more: Dakic, Mijic, 2020). The business entities are very heterogeneous and this is more obvious in small and medium-sized entities (SMEs), which represent the majority of companies on the market of the EU and the Republic of Serbia. Significant part of SMEs is dominated by the entities of the agricultural sector. Agricultural sector activities differ from other sector activities. For that reason, the IFRS for SMEs (Section 34 – Specialized Activities: Agriculture) for agricultural entities who use IFRS for SMEs and IAS 41 for agricultural entities with IAS/IFRS full preparation can provide financial reporting harmonization in the agricultural sector.

Biological assets are the basis of business and achieving the goals of agricultural entities, which is why both internal and external users of accounting information are interested in reliable information on biological assets. Due to the biological transformation and change in value during the period, it affects the change in the amount of total assets and key business performance of the agricultural entity.

Biological assets are an important part of the Balance Sheet, usually, of most of the agricultural entities (some income, depreciation and amortization expenses related with

biological assets are included in the Income Statement). They represent living animals or plants (IAS 41 does not apply to bearer plants related to agricultural activity but applies to the produce growing on those bearer plants) owned (controlled) by the entities acquired from the past activities. The treatment of bearer plants and other long term biological assets is under the scope of IAS 16 – Property, Plant and Equipment. According to IAS 41, biological assets (fruit trees, cotton plants, pigs, sheep, dairy cattle, bees family and other) shall be measured on initial recognition and at the end of each reporting period at its fair value less costs to sell (when there is an active market). IFRS for SMEs contains requirements that if the fair value of a class of biological asset is readily determinable without undue cost or effort, then shall be used the fair value through profit or loss model. If fair value is not readily determinable, according to IFRS for SMEs, or is determinable only with undue cost or effort, then biological assets shall be measured at cost less and accumulated depreciation and impairment. The accounting policies used for a particular biological asset depend on the choice of each entity in accordance with the permitted methods under the scope of full IFRS or IFRS for SMEs.

The aim of this paper is to investigate the differences in the level of biological assets disclosures between the companies which implemented IAS 41 and IFRS for SMEs. Furthermore, the research will indicate which factors have significant impact on the quality of biological assets reporting. The research is based on the sample of 200 observations of financial statements of agricultural companies. The data covered the period 2016-2020 and collected from the publicly available website of Serbian Business Registers Agency (2021).

2. Literature Review

There are numerous research papers about biological assets accounting, evaluation and disclosures of mandatory and voluntary information of biological assets. Accounting of biological assets has a significant impact on the numerous internal and external users of financial statements of agricultural companies. Ferreira et al. (2020) investigated the value relevance of biological assets in Brazilian Public Firms. The results pointed out that profit, net equity and biological assets are relevant to investors and that biological assets generate incremental power in share prices. The findings also indicate that accounting is increasingly fulfilling its role of providing relevant data to users, which reduces costs and potential information asymmetry problems (Ferreira et al. 2020)

Arbidane et al. (2018) while researching the problems and finding the solutions of accounting and evaluation of biological assets in Latvia have concluded that one of the

aspects of biological assets' leading to erroneous accounting is that both animals and plants are reflected under one item of the balance sheet, both as long-term and short-term biological assets. Therefore, the legal acts should extend the classification of the biological assets within the balance sheet. Another arising problem is that the majority of biological assets in Latvia do not have an active market, therefore there is no precise information on the value of such assets. In accordance with the market value of biological assets, Ruben et al. (2021) state in their research that when treating biological assets and agricultural products in accounting, it is essential to have the knowledge of the market, since the information will provide the fair value of crops. Thus, when analyzing the treatment of biological assets and agricultural products, the implementation of IFRS is crucial. They keep control of all the expenditures that occur with the biological assets under development, which are not recorded in the income statement.

It is of great importance that the IASB has found agriculture and farming so different from other activities performed in order to achieve profit, that treatments for recognition, reporting of biological assets and agricultural products would reflect the specifics of this activity. Research by Bohusova et al. (2011) reported that IFRS for SMEs in case of agriculture are more liberal, meaning that one can induce fair value where it is readily ascertainable whereas in other cases it will continue to use historical cost as a valuation basis. Non-current assets are one of the primary issues of the IAS/IFRS accounting systems, because they are an integral part of assets of most business entities. In agreement with this research, Hinke et al (2013) have concluded that the vast majority of small and medium-sized enterprises are not at all informed of the international accounting standards and therefore are unable to define their contribution to financial reporting about biological assets. Regarding different concerns related to IAS 41, research conducted by Goncalves et al. (2014) examined the impact of different firm determinants on the mandatory disclosure of biological assets. The results have shown that biological assets intensity and size have a significant positive impact on the mandatory disclosure practices which is supported by stakeholders and agency theories, whereas the ownership concentration has a significant positive impact on mandatory disclosure practices. Furthermore, Glaum et al. (2013) confirmed that the size of the company is a significant factor that affects the level of disclosure of information in financial statements. The research results indicate that larger companies have allocated more funds for the needs of accounting services and for the purpose of improving the quality of financial reporting, than small businesses. Therefore, the relationship between quality of biological assets disclosures and the enterprise size is positive.

Barker and Schulte (2017) argued in their research that the process of representing fair value in financial statements involve the reporting of institutional facts that are already in existence, while in cases where IFRS13 market ontology is not existing and cannot be represented objectively, the creation of new data does not create new institutional facts. Concluding their findings, the opinion is that the preparers of financial statements should find ways to 'work around' the 'requirements' and that IFRS reported fair values should represent the unknowable. In the research conducted by Agyemang et al. (2019) the main objective was to find challenges facing SMEs in the agriculture sector and establish ways for the implementation of fair value in Ghana. This empirical study concludes that IFRS 13 is complex and quite difficult to enforce at the SMEs level of the agricultural sector, however they imply higher quality of financial reporting and once applied will boost the confidence of investors as the financial reports will show a true fair view of the firm. Investors value bearer biological assets for firms that exhibit higher disclosure levels of biological assets, but independently from the corresponding disclosure level (Goncalves et al. 2017). The results of this research also conclude that there is typically an available market price for consumable biological assets because they are usually sold in the short term, where bearer biological assets on the other hand are held for an extended period and thus it is not easy to assess the corresponding fair value.

The impact on biological assets disclosures was investigated by Oliveira et al. (2006). Based on these results, it can be concluded that the companies with higher profitability rate are expected to disclose more information about biological assets and to avoid any reduction in stock values. These findings are in accordance with the agency theory claims that disclosure can be considered as a control mechanism of manager performance.

Amiraslani et al. (2013) investigate that the level of the quality of disclosures of information in financial statements is positively related to the degree of foreign activity. Furthermore, the results indicate the positive relationship between the disclosure level and listing status.

Baigrie and Coetsee (2016) provide the results of an analysis of the financial reporting compliance of South African public agricultural companies. The results of the analysis show that the majority of South African agricultural companies are using fair value to measure their biological assets at initial recognition as well as at the end of each reporting period. Most of these companies are complying with the compulsory disclosure requirements of IAS 41, and are also providing certain of the recommended voluntary disclosures listed in IAS 41. The study concludes that the measurement methods used by companies to value their biological

assets and the nature and extent of both compulsory and voluntary disclosures of these assets are sector-specific (Baigrie and Coetsee, 2016).

Camargos et al. (2021) provide evidence and compare the measurement and valuation of biological assets in agribusiness with other sectors that have them. The results show that the sectors linked to Brazilian agriculture, when compared to other sectors, are the ones that best present their biological assets, even if they are not the ones that have the greatest representation in relation to their total assets. Furthermore, the results show that the larger the company, the higher its level of compliance, and companies that have a lower return on assets have greater compliance.

3. Methodology

The aim of this paper is to examine the difference in the quality of biological assets disclosures in financial statements according to the IAS 41 and IFRS for SMEs standards. The research is based on a sample of 200 financial statements of agricultural production companies in Serbia during the period 2016-2020. The data are collected from the publicly available registers of companies (The Serbian Business Register Agency, 2021). In order to investigate the quality of financial reporting about biological assets according to IAS 41 and IFRS for SMEs the following hypothesis are set:

H₁: There is a difference between the quality of biological assets disclosure according to the IAS 41 and IFRS for SMEs.

H₂. The factors such as enterprise size, biological assets intensity, current ratio, profitability, leverage and accounting regulation have significant impact on the quality of biological assets disclosures.

The quality of biological assets disclosure was measured based on the mandatory disclosures according to the IAS 41 and IFRS for SME, when the companies are using the fair value for biological assets. According to the mandatory disclosures (IFRS 41), the following information was investigated:

- aggregate gain or loss from the initial recognition of biological assets and agricultural produce and the change in fair value less costs to sell during the period
- description of an entity's biological assets, by broad group
- description of the nature of an entity's activities with each group of biological assets and non-financial measures or estimates of physical quantities of output during the period and assets on hand at the end of the period

- information about biological assets whose title is restricted or that are pledged as security
- commitments for development or acquisition of biological assets
- financial risk management strategies
- reconciliation of changes in the carrying amount of biological assets, showing separately changes in value, purchases, sales, harvesting, business combinations, and foreign exchange differences.

According to the mandatory disclosures (IFRS for SMEs – section 34) the following information was investigated:

- a description of each class of its biological assets.
- the methods and significant assumptions applied in determining the fair value of each category of agricultural produce at the point of harvest and each category of biological assets.
- a reconciliation of changes in the carrying amount of biological assets between the beginning and the end of the current period. The reconciliation includes:
 - the gain or loss arising from changes in fair value less costs to sell;
 - increases resulting from purchases;
 - decreases resulting from harvest;
 - increases resulting from business combinations (the gain or loss arising from changes in fair value less costs to sell);
 - net exchange differences arising on the translation of financial statements into a different presentation currency, and on the translation of a foreign operation into the presentation currency of the reporting entity;
 - other changes.

The quality of biological assets disclosure can be presented by the following formula (see more: Goncalves, 2021).

$$Qx_i = \sum (d_i / m)$$

Where $d_i = 0$ or 1 , $d_i = 1$ if the items are disclosed, $d_i = 0$ if the items are not disclosed, m = the maximum number of applicable items that can be disclosed. The value of Qx_i can be in the range from 0 to 1. Value of 0 indicates that companies did not disclose any information about biological assets. If the companies make disclosures of all information,

then the quality of financial reporting about biological assets is at a very high level and the value of Q_{X_i} is 1.

In order to test the hypothesis H1 the student t test will be conducted. Student t test should indicate if there is a statistically significant difference in the quality of biological assets disclosures between two groups of companies (according to Field, 2005). First group consists of companies which are using the IAS 41, and the second group consists of companies which are using IFRS for SMEs. The second hypothesis will be tested by using regression analysis based on Tabachnick and Fidell (2001) and Brooks (2008). Regression analysis should investigate which factors (enterprise size, biological assets intensity, current ratio, profitability, leverage and accounting regulation) have significant influence on the quality of financial reporting about biological assets. The following regression model is defined:

$$Y_{it} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon_i$$

Y_{it} – dependent variable – quality of biological assets disclosure;

β_0 - model constant;

β_i - coefficient of independent variables;

X_1 - Enterprise size (independent variable)

X_2 - Biological assets intensity (independent variable)

X_3 - Current ratio (independent variable)

X_4 - Profitability (independent variable)

X_5 - Leverage (independent variable)

X_6 - Accounting regulation (independent variable)

E- error with a normal distribution;

i- signify each company ($i=1, \dots, N$);

t- signify the period of time ($t=1, \dots, t$).

In order to conduct the statistical tests SPSS v23 was using. The following table shows the methodology of calculation of variables.

Table 1: Methodology of calculation dependent and independent variables

Variables	Methodology
Y_{it} - Quality of biological assets disclosure	$Qx_i = \sum (d_i / m)$
X_1 - Enterprise size	Natural log of total assets
X_2 - Biological assets intensity	Biological assets / Total assets
X_3 - Current ratio	Current assets / Current debts
X_4 - Profitability	Net result / Total assets
X_5 - Leverage	Total debt / Total assets
X_6 - Accounting regulation	Dummy variable 0 – IFRS for SMEs 1 –IAS 41

Source: Authors illustration based on Walsh, 2003; Rodic et al. 2017.

4. Results and Discussion

The following table presents the descriptive statistics of the quality of biological assets disclosure for two groups of companies. The results indicate that the companies which are using IAS 41 as an accounting regulation for biological assets have the average quality of biological assets of 0.46. On the other side the companies which are using the IFRS for SMEs have an average quality of biological assets disclosure at the lower level of 0,24. There are no companies in either group which have the maximum level of biological assets disclosures. Beside the difference at the enterprise size, descriptive statistics show that larger companies which implemented IAS 41, have higher level of profitability and current ratio. On the other side, these companies have a lower level of leverage.

Table 2: Descriptive statistics

	N	Min.	Max.	Mean	Std. Deviation
IAS 41					
Qxi (IAS 41)	100	.10	.98	.46	.25
Enterprise size	100	7.60	9.80	8.94	.67
Biological assets intensity	100	.22	.74	.50	.17
Current ratio	100	1.88	2.50	2.18	.23
Profitability	100	-.15	.20	.065	.08
Leverage	100	.33	.88	.55	.17
Accounting regulatio	100	0	0	.00	.00
IFRS for SMEs					

Qxi (IFRS for SMEs)	100	.08	.66	.248	.19
Enterprise size	100	4.59	6.88	5.44	.95
Biological assets intensity	100	.33	.66	.46	.11
Current ratio	100	1.70	2.10	1.91	.14
Profitability	100	-.29	.18	.034	.13
Leverage	100	.34	.90	.69	.24
Accounting regulation	100	1	1	1.00	.00

Source: Authors calculation

The results of the student t test are presented in the following table. The Sig. (2 – tailed) is less than 0.05. These results indicate that the difference between the level in quality of biological assets disclosure between the two groups of companies are significant. It can be concluded that the companies which are using the IAS 41 as an accounting regulation for biological assets disclosure, presenting more information in the financial statements notes about the biological assets. According to these results, hypothesis H₁ is confirmed.

Table 3: The results of Student t test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Qx _i	Equal variances assumed	6,624	,011	6,741	198	,000	,2149	,0318	,1520	,2777
	Equal variances not assumed			6,741	187,188	,000	,2149	,0318	,1520	,2777

Source: Authors calculation

The results of correlation matrix (table 4) show that quality of biological assets disclosures has significant and weak correlation with enterprise size, current ratio, leverage and accounting regulation. Based on the results, there is no correlation problem among dependent and independent variables.

Table 4: Correlation analysis

		Qx_i	Enterprise size	Biological assets intensity	Current ratio	Profitability	Leverage	Accounting regulation
Qx_i	Pearson Correlation	1	,298**	,024	,274**	-,118	-,185**	-,432**
Enterprise size	Pearson Correlation	,298**	1	,161*	,514**	,085	-,249**	-,905**
Biological assets intensity	Pearson Correlation	,024	,161*	1	,054	,049	-,076	-,128
Current ratio	Pearson Correlation	,274**	,514**	,054	1	-,034	-,263**	-,563**
Profitability	Pearson Correlation	-,118	,085	,049	-,034	1	-,019	-,140*
Leverage	Pearson Correlation	-,185**	-,249**	-,076	-,263**	-,019	1	,301**
Accounting regulation	Pearson Correlation	-,432**	-,905**	-,128	-,563**	-,140*	,301**	1

Source: Authors calculation

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Variance impact factors (VIF) for independent variables implies that there was no problem with multicollinearity. Furthermore, the Durbin-Watson value of 1.925 indicates that there is no autocorrelation. Model summary in Table 5 indicates that there is no heteroskedasticity (Sig. F is less than 0.05).

Table 5: Model summary

Model	Adjusted R Square	Change Statistics					Durbin-Watson
		R Square Change	F Change	df1	df2	Sig. F Change	
1	,444	,467	11,715	6	193	,000	1,925

Source: Authors calculation

The presented results in table 6 show that the proposed model is statistically significant with $p < 0.05$. The quality of biological assets disclosures are significantly related to the enterprise size, profitability and accounting regulation. On the other hand, independent variables such as biological assets intensity, current ratio and leverage do not have significant impact on biological assets disclosures. According to these results it can be concluded that the hypothesis H2 is partially confirmed. Enterprise size has a significant impact on biological assets disclosures. Larger companies have a greater value of the quality of biological assets disclosures. These findings are related to the findings of other investigations (Hinke et al

(2013; Goncalves et al. 2014; Glaum et al. 2013). Profitability has a significant impact on biological assets disclosures. According to these findings it can be concluded that companies with the higher rate of ROA have a higher level of the quality of biological assets disclosures. These findings are related to the previous research Oliveira et al. (2006). Furthermore, accounting regulation has a positive impact on the biological assets disclosures. Based on these results, it can be concluded that the companies which implement IAS 41 have better quality of biological assets disclosures.

Table 6: The results of regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,661	,196		3,365	,001
	Enterprise size	,066	,019	,522	3,555	,000
	Biological assets intensity	-,029	,103	-,018	-,281	,779
	Current ratio	,004	,078	,004	,051	,960
	Profitability	,457	,139	,207	3,284	,001
	Leverage	-,047	,072	-,042	-,647	,518
	Accounting regulation	,446	,076	,914	5,908	,000

Source: Authors calculation

5. Conclusions

This paper analyzes the differences in the level of biological assets disclosures of 200 agricultural companies in the Republic of Serbia that adopted full IFRS or IFRS for SMEs. The quality of biological assets disclosure was measured based on the mandatory disclosures according to the IAS 41 and IFRS for SME, when the companies are using the fair value for biological assets. There is a clear difference in the quality of disclosure between companies that apply IAS 41 and companies that apply IFRS for SMEs. The companies which are using the IAS 41 as an accounting regulation for biological assets disclosure, are presenting more information in the financial statements notes about the biological assets. They also have the average quality of biological assets of 0.46 (companies which are using the IFRS for SMEs are at the lower level of 0,24) and they have higher level of profitability and current ratio. But, these companies have a lower level of leverage. According to the findings in this paper, the quality of biological assets disclosures are significantly related to the enterprise size, profitability and accounting regulation. That indicates that the better quality of biological assets disclosures are in companies with IAS 41 implemented

The authors believe that the reasons for differences and scarce quality of IFRS for SMEs should be viewed from the point of audit, because a significant part of companies from the sample that apply IAS 41 are also subject to audit, while very few companies that apply IFRS for SMEs are subject to audit.

Positive significant impact on biological assets disclosures have larger enterprises with higher profitability, higher rate of ROA and accounting regulation. But biological assets intensity, current ratio and leverage do not have significant impact on biological assets disclosures.

Results in this paper are of enormous importance for improving the quality of reporting on biological assets in the Republic of Serbia and beyond. Companies that apply IFRS generally publish a description of the entity's biological assets, by broad group, while the least publish financial risk management strategies. Although the requirements of IFRS are lower, companies disclose to a lesser extent, while most of them publish a description of each class of their biological assets. It is pointed out as a shortcoming that disclosures have been observed in companies that apply fair value, because they apply fair value to a greater extent. It is recommended that future research should compare disclosures depending on valuation methods (fair value and cost less any accumulated depreciation and any accumulated impairment losses).

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