ACCOUNTING FOR AGRICULTURAL ACTIVITY: HOW TRANSPARENT ARE SERBIAN COMPANIES?

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A R T I C L E I N F O

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A B S T R A C T

In this study, we analyze compliance with global professional accounting regulation in a sample of Serbian agricultural companies. Focusing on key mandatory disclosures related to biological assets, we calculate the companies' annual and average Disclosure Scores and find significant non-compliance. Despite the adoption of International Financial Reporting Standards (IFRS) as the "gold standard" for high-quality financial reporting, company management fails to provide transparent disclosures in the financial statements, underscoring the importance of country- and company-specific determinants of financial reporting quality. We identify that variations in financial transparency can be explained by differences in the company's reporting framework, type of auditor, and ownership structure, while the effects of company size and legal form remain inconclusive. The findings of our research may be valuable to investors, corporate managers, regulators, and future researchers looking at the quality of financial reporting on agricultural activity.

Introduction

Financial transparency is widely recognized as a cornerstone of modern financial markets and economies, playing a vital role in fostering trust, driving growth, and ensuring long-term financial stability on a global scale. Market failures, crises, and financial scandals throughout history and across the globe consistently highlight the extensive, harmful, and far-reaching consequences of financial opacity and misreporting[3]. The quality of financial information became a critical concern for accounting professionals, regulators, investors, and academics worldwide following

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3 For example, the famous Enron scandal resulted in a 20 billion dollar loss of the company's market value and 98% decrease in market capitalization; see more in Stevanović, Malinić (2009).

a series of dramatic financial and accounting scandals. These events shook financial markets and undermined public trust in financial reporting systems, even in some of the world's most developed economies at the turn of the century. In response to heightened public scrutiny, global efforts were made to strengthen financial market regulations and revise accounting standards. These measures aimed to enhance transparency, improve the quality of financial information, and increase international comparability. Such an environment is believed to facilitate more efficient capital allocation at both local and global levels, enabling market participants to make informed economic decisions i.e. to identify investment opportunities and assess associated risks with more certainty.

However, the actual quality of a company's financial information relies on a number of factors, with the quality of accounting standards oftentimes not being the decisive one. Research show that, under a given set of financial reporting rules, the features of company's disclosed financial information will ultimately be shaped by the reporting choices of the company's management (Watts, 1977, Ball et al., 2003). These "preparer incentives" essentially depend on local market and political forces that set the demand for high-quality financial reporting and define the functions of the financial statements in the economy (Ball et al., 2000, Ball et al. 2003, Goncharov et al., 2009). A large body of research points to numerous determinants of financial reporting quality, both country and company-level. These include the features of the local enforcement systems, capital market, national laws, governance structures, cultural factors, but also the company's listing status, industry, size, the extent of ownership concentration, profitability, indebtedness, type of auditor, etc. (Ball et al., 2003, Leuz et al., 2003, Goncharov et al., 2009, Glaum et al., 2013). Thus it is clear that making informed economic decisions practically hinges on financial statement users' ability to evaluate their quality before drawing any conclusions about a company's performance and future prospects.

These circumstances make the quality of financial reporting a continuous focus of academic research, particularly given the lack of universally accepted definitions and measures of quality, as well as the growing complexities of modern business entities that must be financially recognized. The Serbian reporting environment is especially intriguing due to its proclaimed adherence to global professional accounting regulation of the highest quality (International Financial Reporting Standards – IFRS) alongside the apparent absence of developed capital market that would naturally drive demand for high-quality financial information. As a result, the quality of financial information disclosed by Serbian companies remains an open question.

Our research focuses on agricultural companies for two main reasons: (1) the sector's traditional significance to the Serbian economy and the growing need for enhanced investment efficiency, and (2) the inherent complexities in accounting treatment and financial reporting related to agricultural activity. Beyond typical business risks, the biological nature of agriculture and its vulnerability to climate change significantly heighten the uncertainty surrounding future investment returns for agricultural companies. Monetizing the biological transformation of living animals and plants, accounting for agriculture is designed to help mitigate these informational risks.

However, it is a process abundant with challenges, often requiring agriculture-specific knowledge and valuation skills that surpass an average accountant's expertise. Hence, providing relevant and faithfully presented information on a company's performance related to agriculture could become costly and time-consuming, necessitating close collaboration between accountants and industry experts.

Building on prior research on financial reporting quality, we argue that enhanced transparency in agricultural entities' financial reporting has a potential to promote capital formation within the sector, create more investment opportunities, and lower the cost of capital (Diamond and Verrecchia, 1991, Botosan, 1997, Healy and Palepu, 2001, Botosan and Plumlee, 2002, Francis et al., 2005). However, we anticipate that the overall quality of financial information disclosed by agricultural entities will be influenced by country- and company-specific factors. The varying impact of these determinants makes our research exploratory in nature.

The Characteristics of the Serbian Financial Reporting Environment

Accounting and financial reporting rules vary depending on the type of business entity. "Full" IFRS are mandatory for large legal entities, as well as for parent and public companies, regardless of their size. Other companies also have the option to adopt full IFRS as their reporting framework. Otherwise, they are required to use either the International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs) or the national rulebook for accounting and financial reporting, depending on their size[4]. The local reporting system is designed to ensure full transparency of business entities' financial information. Serbian Business Registers Agency (SBRA) publishes annual financial statements and audit reports for the most recent three reporting periods on its website.

Country's public commitment to adopting IFRS as a single set of high-quality global accounting standards should ensure the relevance and faithful representation of financial information. However, research show that weaknesses within the national financial reporting system significantly diminish the overall quality of Serbian companies' financial reports (Djukić and Pavlović, 2014, Decker, 2015, Malinić et al., 2016, Vučković Milutinović, 2019, Aničić et al., 2023). These shortcomings can be observed not only in the country's normative and regulatory framework but also in its monitoring and enforcement mechanisms (Vučković Milutinović, 2019). Reporting entities seem to prioritize minimizing the costs of disclosures, without recognizing any additional reporting benefits beyond mere legal and tax compliance (Decker, 2015, Malinić et al., 2016). The perceived quality of disclosed financial information varies somewhat by sector and company size, with financial institutions, large-sized companies, and subsidiaries of international groups often having financial statements of higher quality (Decker, 2015).

4 For more detail see Law on Accounting (Official Gazette of the Republic of Serbia no. 73/2019 and 44/2021 – other law).

The lack of practical use of financial statements' information by the existing and potential investors and creditors in Serbia is generally recognized as one of the key factors hindering improvements in their quality. General purpose financial reporting is designed with an objective to provide financial information about the company that is useful to its capital providers (IASB, 2018, par. 1.2). However, in the absence of capital market demand for high quality financial statements, a company's financial reporting is expected to become susceptible to other influences, predominantly taxation (Nobes, 2006, Goncharov et al., 2009, Djukić and Pavlović, 2014). This is especially true for jurisdictions with strong links between accounting and tax regulations like Serbia.

Capital markets in Serbia remain shallow and underdeveloped, with a limited role in financing the economy (Bango et al., 2019). The financial system is bank-dominated, making banks the primary users of business entities' general purpose financial statements (Bango et al., 2019, Vučković Milutinović, 2019). However, it seems that banks overlook even the most obvious quality issues. Vučković Milutinović (2019) finds that banks in Serbia often ignore modified auditor's opinion in their lending decisions. As a result, companies can expect to face little to no consequences from their capital providers for misreporting financial information. In such circumstances financial statements become perceived as a mere legal requirement i.e. a formality that needs to be met to avoid penalties imposed by national legislation, frequently without sufficient attention to their content (Djukić and Pavlović, 2014, Decker, 2015). Moreover, a significant proportion of companies continue to neglect even this formal obligation. Obradović et al. (2021) report that, as of August 1, 2020, 20% of companies listed on the Belgrade Stock Exchange had not made their 2018 General Purpose Financial Reports publicly available. Furthermore, Mitrović et al. (2024) identify a rising trend in the number of companies failing to disclose financial statements during the 2019–2021 period. Hence, it is not surprising that a substantial portion of companies - 16.75% of all reporting entities in 2023 - failed to prepare and disclose their annual financial statements (APR, 2024, p. 12).

Following Decker (2015) we expect large-sized agriculture companies and subsidiaries of international groups to have better quality disclosures. Larger companies tend to have stronger incentives for compliance, due to their bigger exposure to political pressures and public scrutiny in comparison to smaller companies (Watts and Zimmerman, 1990), as well as the influence of numerous transacting stakeholders (such as suppliers and customers) who act as a powerful market force encouraging voluntary disclosure (Breuer et al., 2020). Furthermore, their accounting departments are also expected to be better equipped, allowing for a higher quality of financial reporting (Glaum et al., 2013). The research by Obradović et al. (2021) corroborates the effect of company size on financial transparency among listed Serbian companies. When a local company is established as a subsidiary of an international group, it is likely to align its accounting and reporting practices with those of its parent company for consolidation purposes. If the group primarily operates in markets with a well-developed financial reporting infrastructure, its local subsidiaries are expected to produce higher-quality disclosures. As Opper (2003) argues, deeper integration into the global economy can create competitive pressure and incentives for companies to enhance their financial transparency.

Information asymmetries and agency problems may encourage the management of companies with widely dispersed ownership to disclose more information compared to closely held or private companies (Glaum et al., 2013). However, we argue that these reporting incentives depend on the strength of local enforcement mechanisms and the actual level of minority investor protection. Therefore, we do not make specific predictions regarding differences in financial reporting quality based on a company's legal and ownership structure.

Dominating the global accounting market, the Big 4 audit firms are widely regarded as pillars of high-quality financial reporting. Their global presence, scale, and reputation are often assumed to result in superior audit quality compared to local auditing firms. While prior studies largely support this expectation, it is important to acknowledge that some of the most significant international financial scandals and frauds have involved companies that received unqualified opinions from Big 4 auditors (Malinić, 2008). This underscores the critical importance of evaluating financial reporting quality for users of general-purpose financial statements. Following Vasilić (2020) and Obradović et al. (2021), we expect Serbian companies audited by a Big 4 firm to demonstrate greater financial transparency.

Recognizing that IFRS for SMEs is essentially a "full" IFRS standard adapted to the needs of SMEs, with modifications based on cost-benefit considerations, we expect agriculture companies applying "full" IFRS to produce higher-quality disclosures.

Challenges in Financial Reporting for Agricultural Activities

One of the key characteristics of agricultural businesses is their reliance on biological assets, such as living animals and plants. These assets undergo continuous transformation through biological development and growth, making their management and valuation uniquely complex. Additional challenges come from their heterogeneities in terms of variety, race, gender, productivity, health status, or stage of the life cycle, as well as their climate and seasonal variability. These factors necessitate specialized expertise from accountants in recognizing, measuring and reporting on biological assets. As a result of these complexities, the agricultural sector is governed by specific accounting regulations, such as International Accounting Standard 41 (IAS 41) Agriculture (IASB, 2020) and a dedicated section (Section 34) of the IFRS for SMEs (IASB, 2025).

IFRS establishes fair value as the primary method for measuring biological assets, both at their initial recognition in company's books and at the end of each reporting period. Specifically, biological assets should be measured at fair value less estimated costs to sell. Any changes in their value during the period are recognized as gains or losses, directly affecting the company's annual financial results. This accounting treatment makes the valuation of biological assets a handy tool for earnings management, potentially introducing significant informational risks for users of financial statements. Furthermore, the fair value model can lead to income volatility, which may obscure a company's true financial performance and complicate predictions of its future returns. This issue is particularly pronounced in the absence of active markets or quoted prices for identical biological assets at the measurement date (which can be reasonably expected for example for crops at the various stages of growth or for combined assets). In such cases, an asset's fair value must be estimated using appropriate valuation techniques, with an emphasis on maximizing the use of relevant observable inputs and minimizing reliance on unobservable inputs (IASB, 2016). However, the use of different valuation techniques and assumptions in estimating the fair value of biological assets directly hinders the comparability and jeopardizes the usefulness of agricultural companies' financial information. Similar issues can be expected in the estimation of an asset's costs to sell.

In the absence of quoted market prices and reliable valuation inputs, companies may opt to abandon the fair value approach and measure biological assets at cost, less any accumulated depreciation and impairment losses. IFRS for SMEs permits this treatment for all biological assets where fair value is not "readily determinable without undue cost or effort" (IFRS for SMEs, par. 34.2). However, IAS 41 allows this treatment only at the initial recognition of an asset, requiring the entity to switch to fair value as soon as it becomes reliably measurable.

The complexities surrounding the accounting treatment of biological assets underscore the need for additional disclosures in the company's notes to the financial statements. This is particularly relevant given the current structure of the Serbian official Balance Sheet form. Biological assets are listed as a single item within the company's fixed assets section, reporting a summarized value that encompasses various categories of assets, with differing valuation basis and expected cash flow streams (including forests, bearer plants, livestock, biological assets under construction, and paid advances for biological assets). In such circumstances, making any inferences about the company's expected future cash flows arising from agricultural activity becomes virtually impossible without additional details. Thereby, the actual usefulness of company's financial information on biological assets for economic decision-making hinges on the managements' commitment to providing transparent disclosures.

Given the prevailing features of Serbian financial reporting environment, we anticipate that the management's incentives for transparent disclosures are likely to be low. The findings of previous studies generally confirm these expectations. Mijić et al. (2011) examined the financial statements of 30 Serbian agriculture companies from 2008 to 2011 and identified significant deficiencies in their compliance with IAS 41 mandatory disclosures. Although the number of compliant companies increased over time, full compliance was observed for the first time in 2010, accounting for only 6.67% of the analyzed cases. The majority of companies failed to disclose both the fair value and physical quantities of their biological assets.

Savić and Obradović (2020) largely confirm these findings in their analysis of 100 Serbian agribusiness entities from 2015 to 2017. They found that only 15% of the examined companies recognized biological assets in their financial statements. While all of these companies stated fair value less costs to sell as the basis for valuation, they failed to provide any further disclosure details.

Using discretionary accruals as a proxy for financial reporting quality, Đorđević et al. (2024) analyzed the 2018-2022 financial statements of 99 large and medium-sized agricultural companies registered in Serbia. They found that more profitable companies tend to have better financial reporting quality, followed by companies audited by Big 4 firms and those with low levels of debt. Their results also indicate that a company's liquidity, board size, and audit tenure have no significant impact on the quality of its financial information.

Tomašević et al. (2024) argue that the complexity of resource management in the food industry can impact a company's financial performance. They document a statistically significant negative relationship between profitability and the materiality of assets, attributing this to food enterprises' inefficiency in utilizing or managing fixed assets. However, these findings may stem from management's failure to provide an accurate valuation of the company's fixed assets, including biological assets.

Materials and methods

Sample construction and data

Our study is based on a sample of Serbian agriculture companies that have officially filed their annual general purpose financial reports (GPFR) for the year 2023 to SBRA. A "company" is any business entity that is legally obliged to file its GPFR, according to the prevailing regulations in the Republic of Serbia. We use *Scoring* database to select companies according to our research criterions. We then use the official publicly available GPFR database of SBRA to collect audited GPFR of selected companies for the period 2021-2023, together with the independent auditor's reports. We also use the websites of SBRA and the Central Securities Depository and Clearing House, to investigate the company ownership.

We focus on companies whose registered activity code belongs to the sector A - Agriculture, forestry and fishing, as defined by the Regulation on the Classification of Activities ("Official Journal of the Republic of Serbia" no 54/2010). Although biological assets can be found in the financial statements of non-agriculture companies as well, we expect these items to be materially insignificant in terms of financial reporting of such companies and therefore omit them from the analysis. This assumption is confirmed by the data from GPFR of Serbian companies for the year ended December 31, 2023 (APR, 2024), as seen in Table 1.

Table 1. Biological assets of Serbian companies in GPFR for the year 2023

Industry sector	Biological Assets	
	Value in RSD 000	Proportion of Total Assets
A - Agriculture, forestry and fishing	176,437,272	17.70%
All other sectors	40,038,251	0.18%

Source: Authors' calculations based on APR (2024)

Creating the sample, we concentrate on medium and large-sized agriculture companies. These companies controlled 60.2% of the total assets, generated 58% of the total revenue and earned 83.6% of the total profit of the entire sector A in the year ending December 31, 2023, as seen in Figure 1 (excluding the negative results of micro-sized companies). Hence, despite not being the most frequent types of companies in the sector (making up for the mere 3.6% of the total number of active agriculture companies, as opposed to 80.8% micro-sized entities), these companies accumulated the dominant part of sector's economic power, which highlights the importance of their financial data quality. The seriousness of this matter is corroborated by the fact that medium and large-sized companies are subject to obligatory annual independent audits, with an aim to increase the credibility of financial information they disclose to the public.

Aspiring to investigate the majority of audit-liable entities, we also include listed agriculture companies, regardless of their size. Being able to accumulate substantial sums of capital, joint-stock companies are generally considered to be "the most significant organizational form of corporate entities" (Malinić, 2007, p. 67). They dominate developed markets and earn the largest amounts of revenue worldwide (Fortune, 2024). Usually having numerous and diversified shareholders, these public companies traditionally use the GPFR and annual business reports as means of communication with their existing and potential capital providers. This makes the quality of their financial data a matter of paramount importance for the efficient capital allocation world-wide.

The sample selection procedure was largely influenced by the availability of data. Hence, our research period is limited to three years, from 2021 to 2023, due to the lack of available financial statements and audit reports for previous years. Our preliminary sample comprised the total of 141 medium, large-sized and listed agricultural companies in the Republic of Serbia. Following the purpose of our study, we investigated Balance Sheets of these companies for 2021, 2022 and 2023, to make sure they had biological assets (AOP 0017 of the Balance Sheet) in the analyzed period. We then excluded the ones that didn't. Accordingly, our final sample was downsized to 47 agriculture companies i.e. 141 firm-years.

Figure 1. Active agriculture companies (sector A) in 2023, registered in the Republic of Serbia, according to company size

**Micro sized companies recorded negative net result overall.*

Source: Authors' calculations

Research design

We analyze the disclosures in the audited GPFR of selected companies, primarily focusing on Balance Sheet, Income Statement and accompanying Notes, aiming to assess the material significance of biological assets and to investigate the compliance of accompanied disclosures with the prevailing regulation requirements.

Investigating the material significance of biological assets in GPFR of analyzed companies, we rely on their financial reporting framework. In terms of IFRS and IFRS for SMEs, materiality of financial information is one of the key aspects of their relevance i.e. usefulness for decision-making. Namely, information is considered to be material if "omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of GPFR make on the basis of those reports" (IASB, 2018, par. 2.11). Being a strictly entity-specific concept based on information's nature, magnitude or both, materiality is not quantitatively pre-defined neither by the accounting standards, nor national regulations. Hence, in the absence of official materiality thresholds, accounting practitioners rely on their professional judgment (Savić, 2019). For the purpose of our research, we label biological assets as materially significant if their value exceeds 1% of the company's total assets.

Analyzing the provided disclosures in Notes, we focus on the following matters:

1. disclosure of company's accounting policy regarding biological assets;
2. description of each group of biological assets;
3. disclosure of gain or loss arising from the change in fair value less costs to sell of biological assets;
4. description of the nature of company's activities involving each group of biological assets;

5. disclosure of non-financial measures or estimates of the physical quantities of each group of company's biological assets at year-end and
6. company's output of agricultural produce during the year;
7. disclosure of information on the estimation of the fair value of biological assets (or the inability to determine it);
8. disclosure of reconciliation of changes in the carrying amount of biological assets between the beginning and the end of the year.

According to the disclosures a company has made in its GPFR (i.e. Notes) for the analyzed period, each company was given an annual Disclosure Score (DS), with higher score meaning better quality disclosures, as shown in Table 2.

Table 2. Disclosure Score

Total number of selected disclosures a company has made in its GPFR (out of the analyzed 8)	Disclosure Score (DS)
7, 8	5
5, 6	4
3, 4	3
1, 2	2
0	1

Source: Authors' calculations

Additionally, we examine the independent auditor's reports on the GPFR of analyzed companies and link them to a company's DS for the year, to assess whether auditors consider the possible misreporting practices to be "modification worthy". We also investigate the differences in company's DS according to the type of company's reporting framework (IFRS/IFRS for SMEs), legal form (limited liability company – llc; joint stock company – jsc; public enterprise – pe), size, ownership structure (concentrated/diversified), type of company's dominant owner and type of auditor (Big4/non-Big4).

Results and Discussions

Descriptive statistics

During the period 2021-2023, an average company from our sample controlled assets in the total amount of 8.5 RSD billion, out of which fixed assets amounted to 6.9 RSD billion and biological assets to 3.4 RSD billion (Table 3). At the same time, average equity amounted to 6.8 RSD billion and average net profit to 129.1 RSD million.

The value of biological assets in the GPFR of analyzed companies for the selected period varied from zero (only one firm-year) to the maximum of 111.921,8 RSD billion, making on average 9.86% of company's total assets and 14.02% of fixed assets (Table 4). Biological assets were materially significant (exceeded the amount of 1% of the company's total assets) in 79.29% of the analyzed firm-years.

Table 3. Descriptive statistics for selected financial items (in RSD million)

Item	Mean	Standard deviation	Minimum	Median	Maximum
Total Assets	8,552.5	21,281.9	157.5	2,935.4	138,902.8
Fixed Assets	6,956.8	20,731.8	115.3	1,819.3	136,606.0
Biological Assets	3,424.5	17,011.8	0.0	104.3	111.921,8
Equity	6,840.6	20,152.8	0.0	1,590.1	132,588.6
Net profit	129.1	488.1	-2,219.2	77.9	3,158.7

Source: Authors' calculations

Table 4. Descriptive statistics for biological assets

Item	Mean	Standard deviation	Minimum	Median	Maximum
Biological Assets / Total Assets	9,86%	16,73%	0,00%	5,12%	81,40%
Biological Assets / Fixed Assets	14,02%	19,12%	0,00%	6,95%	84,79%

Source: Authors' calculations

The sample is dominated by medium-sized (74.47%), limited liability (74.47%) companies, with registered activity code 0111 - Growing of cereals (except rice), leguminous crops and oil seeds (51.06%), as shown in Table 5. Concentrated ownership was found in 89.36% of companies, with domestic natural persons as dominant owners in 73.81% of cases. Due to the lack of publicly available data, we were unable to determine the actual owners of identified foreign legal entities. Hence, our results may be biased in this matter. The majority of analyzed companies applied full IFRS, had an unqualified auditor's opinion on their GPFR and a non-Big4 auditor (Table 6).

Table 5. Sample description – status data

Registered activity code		Size		Legal form		Concentrated ownership		Dominant owner	
Type	%	Type	%	Type	%	Type	%	Type	%
0111	51.06%	Medium	74.47%	Llc	74.47%	Yes	89.36%	Domestic natural person	73.81%
0146	14.89%	Large	17.02%	JSc	21.28%	No	10.64%	Foreign legal entity	19.05%
0147	8.51%	Small	6.38%	PE	4.26%			State	7.14%
Other	25.53%	Micro	2.13%						

Source: Authors' calculations

Table 6. Sample description – Financial Reporting Framework and Audit

Financial Reporting Framework		Auditor		Auditor's opinion	
Type	**%**	**Type**	**%**	**Type**	**%**
IFRS	80.85%	Big4	15.60%	Unqualified	81.56%
IFRS for SMEs	19.15%	Other	84.40%	Qualified	13.48%
				Disclaimer of opinion	0.71%
				Not publicly available	4.26%

Source: Authors' calculations

Findings and Discussions

Table 7 summarizes the results of the analysis of the disclosure of information that could help the users of GPFR to better understand the significance of biological assets for company's operations; to assess their impact on the amount, timing and uncertainty of company's future net cash inflows and to evaluate how efficiently and effectively has the company's management used these resources during the year.

Table 7. Disclosures on biological assets in GPFR

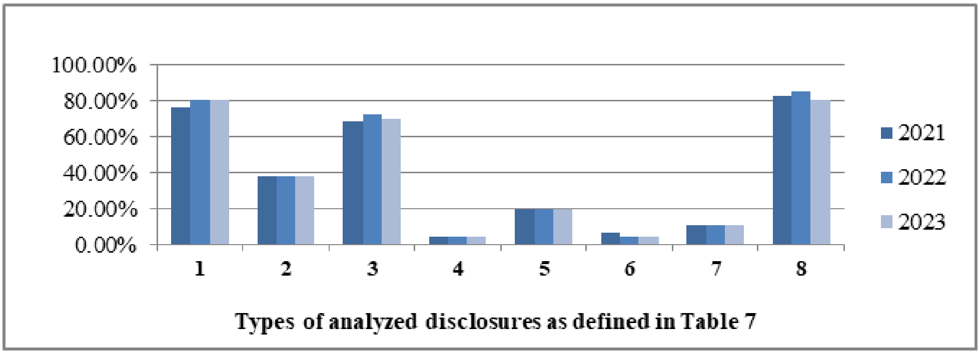
Disclosures in Notes		Disclosed		Not disclosed	
		n	**%**	**n**	**%**
1	Company's accounting policy regarding biological assets	112	79.43%	29	20.57%
2	Description of each group of biological assets	54	38.30%	87	61.70%
3	Gain or loss arising from the change in fair value less costs to sell of biological assets	99	70.21%	42	29.79%
4	Description of the nature of company's activities involving each group of biological assets	6	4.26%	135	95.74%
5	Physical quantities of each group of biological assets at year-end	27	19.15%	114	80.85%
6	Physical quantities of company's output of agricultural produce during the year	7	4.96%	134	95.04%
7	Information on the estimation of the fair value of biological assets	15	10.64%	126	89.36%
8	Reconciliation of changes in the carrying amount of biological assets between the beginning and the end of the year	117	82.98%	24	17.02%

Source: Authors' calculations

The overall impression is that the management of Serbian agriculture companies does not seem to pay sufficient attention to the quality of financial reporting on biological assets. Namely, even the simplest elementary requirement to disclose company's accounting policy regarding the recognition and measurement of biological assets wasn't met in more than 20% of analyzed firm-years. Likewise, in 95.74% of cases a company has failed to provide any disclosures regarding the nature of its activities involving biological assets. The provision of information on physical quantities seems significantly troublesome, as well. The same can be said for disclosures regarding the assessment of fair value of biological assets at year-end, having in mind that in mere 10.64% of analyzed Notes, the management provided some information that could shed light on the valuation process (for example, used prices or assumptions). The most frequently met disclosure requirement refers to the reconciliation of changes in the book value of biological assets between the beginning and the end of the year. However, in all 82.98% of the cases, the requirement was met with a simple table of changes in value, without any additional explanations.

Observing the trend of disclosed information during the analyzed period, we have found that the proportion of companies which have fulfilled individual disclosure requirements varied downwards or stagnated, as seen in Figure 2. This is opposed to Mijić et al. (2011), who determined an increase in compliance with IAS 41 disclosure requirements for the period 2008-2010. Signaling the deterioration of quality in reporting on biological assets, our findings can be interpreted as troublesome, especially considering the fact that we analyzed audited GPFR. Accordingly, auditors have either failed to detect these disclosure shortcomings (and request their corrections during the analyzed period), or have treated these matters as materially insignificant in terms of company's financial reporting as a whole.

Figure 2. Proportion of disclosures on biological assets during the years

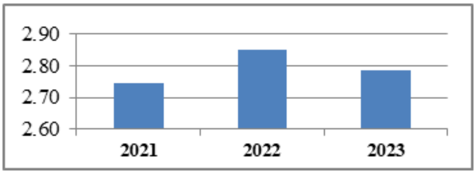


Source: Authors' calculations

Analyzing the total number of disclosures a company has made in its GPFR (out of the selected 8, as seen in Table 7) we have found an average DS (*av*DS) of 2.79. This means that on average, Serbian agricultural companies disclosed between two or three pieces of information regarding their biological assets for the period 2021-2023. Observed annually, *av*DS varied, peaking in 2022 (2.85), as seen in Figure 3. The observed *av*DS for companies with materially significant biological assets was 2.88, compared to 2.55 for others, indicating similar disclosure practices across companies, irrespective of the value of their fixed assets related to agricultural activity.

In 64.54% of analyzed cases, company's annual DS exceeded the average. We have identified only 3 cases (firm-years) in which the disclosure requirements were fully met (Table 8). The most frequent DS (67 firm-years) was 3. In 80.85% of analyzed GPFR (DS 3 and 2), a company has published not more than a half of disclosures required by the prevailing reporting framework. Especially worrying is the fact that all of these GPFR were published as "compliant to IFRS/IFRS for SMEs", while apparently failing to comply with all of IFRS/IFRS for SMEs requirements. The danger lies in the potential for such GPFR to mislead users, which could lead to failed investments and ultimately hinder the efficient capital allocation in the economy. The findings of Goncalves et al. (2017) emphasize this issue, revealing that biological assets are value-relevant when measured at fair value, with their relevance increasing as the transparency of financial statements improves.

Figure 3. Average Disclosure Score (*av*DS) during the years



Source: Authors' calculations

Table 8. Disclosure Scores (DS) of analyzed companies

Disclosure Score (DS)	Firm-years[i]	
	n	%
5	3	2.13%
4	21	14.89%
3	67	47.52%
2	47	33.33%
1	0	0.00%

[i] *Notes to the financial statements were not published for three firm-years.*

Source: Authors' calculations

Our research findings on the effects of company-specific determinants of financial reporting quality are summarized in Table 9.

Table 9. Company-specific determinants of financial reporting quality

Determinant / Average Disclosure Score (*av*DS)			
Framework for financial reporting		***Ownersip***	
IFRS	2.85	Concentrated	2.77
IFRS for SMEs	2.56	Diversified	3.00
Legal form		***Dominant owner***	
Limited liability company	2.78	Domestic natural person	2.51
Joint Stock company	2.80	Foreign legal entity	3.75
Public Enterprise	3.00	The state	2.89
Size		***Auditor***	
Micro	2.00	Big4	3.45
Small	2.00	Other	2.73
Medium	2.90		
Large	2.75		

Source: Authors' calculations

As expected, we have found that agriculture companies applying IFRS achieved higher *av*DS i.e. on average had better quality disclosures on biological assets compared to companies which used IFRS for SMEs as their reporting framework. However, *av*DS of 2.85 seems significantly low in terms of IFRS as the "golden standard" in financial reporting. Similar can be said for companies with Big4 auditors. While they achieved higher *av*DS as predicted, it is clear that an average of 4-5 disclosures on biological assets cannot be considered as full adherence to IFRS disclosure requirements. These findings strongly indicate the deficiencies in application of IFRS in agriculture companies in Serbia. They also confirm the need for effective, country-specific IFRS enforcement mechanisms in securing high quality financial statements.

When it comes to company's size and legal form, our results are inconclusive. While micro and small-sized entities did show lower quality disclosures, companies of medium size unexpectedly scored the highest *av*DS. This outcome is somewhat confusing, considering the additional effects of company's reporting framework (IFRS as an exclusive reporting framework for large-sized entities should provide an additional "boost" to their financial transparency). Hence, a company's size alone does not seem to be a significant determinant of its financial reporting quality.

Considering a company's legal form, we observed the lowest *av*DS in private (limited liability) companies. This aligns with the findings of Gassen and Muhn (2025), who attribute private firms' disclosure choices to informational constraints and processing costs. However, public enterprises, on average, demonstrated better quality disclosures than those listed on the Belgrade Stock Exchange. These findings align with the broader characteristics of the Serbian financial reporting environment. Nevertheless, they raise concerns about the future development of local capital markets and their potential impact on economic growth.

Our findings generally confirm the effect of diversified ownership on financial reporting quality. Still, the highest *av*DS in the analyzed period was detected on a subsample of companies with concentrated ownership and foreign legal entities as dominant owners. This is in line with the findings of Decker (2015). However, lacking the information on the ultimate owners of such companies, we can only assume that they are subsidiaries of a foreign parent i.e. liable to consolidation in other jurisdictions. Hence, it is possible that our results are biased in this matter.

We have found that 81.56% of the analyzed GPFR were certified by the independent auditors as prepared (in all material respects) in accordance with the applicable framework for financial reporting (Table 6). Although such an opinion should generally be considered as a confirmation of company's GPFR quality, our research has shown an *av*DS of 2.82 in the subsample of GPFR with an unqualified auditor's opinion. We believe these findings to be contradictory. It is possible that biological assets of subject companies were not materially significant in terms of audit. Nevertheless, we have determined that in 80% of the GPFR with an unqualified auditor's opinion, the value of biological assets exceeded the amount of 1% of company's total assets for the year. Still, our research has shown that the majority of these GPFR (64.13%) had not more than 3 disclosures pertaining to biological assets, while the highest DS (5) was detected in only 3 observations (firm-years). Interestingly enough, a company with the highest DS had a qualified auditor's opinion in the entire analyzed period (although the qualification was not related to biological assets). When it comes to the subsample of GPFR with a qualified auditor's opinion, we have detected an *av*DS of 3, and only 2 firm-years where the qualification was related to the company's biological assets. Accordingly, our findings suggest that the auditor's opinion should not be regarded as a "bulletproof" guarantee of GPFR quality on Serbian market, at least when it comes to reporting on biological assets. However, it is possible that agricultural activity represents a materially insignificant aspect of analyzed companies' operations i.e. that on overall, biological assets were not considered by the auditors as important information for GPFR users. Hence, these findings should be interpreted with caution.

Conclusions

Our study examines compliance among Serbian agricultural companies that are mandatorily applying IFRS ("full" IFRS or IFRS for SMEs). We focus on disclosures essential for understanding the financial effects of agricultural activities, particularly the assessment of amounts, timing, and uncertainties related to future cash flows from biological assets. Each company was assigned an annual Disclosure Score (DS) based on the number of mandatory disclosures provided for the year. To explore differences in financial transparency, we calculated average Disclosure Scores (*av*DS) and analyzed them in relation to various company-specific factors identified in previous research as potential determinants of financial reporting quality.

Under a given accounting regulation, we argue that the actual characteristics of a company's disclosed financial information are influenced by the local reporting environment and company-specific factors. Despite the adoption of IFRS as the "gold standard" for high-quality financial reporting, Serbia continues to face challenges in the realm of financial reporting, due to weak regulatory mechanisms and limited capital market activity. In the absence of strong market and regulatory pressures, financial reporting quality is expected to decline.

Our findings confirm the generally low quality of financial reporting in the agricultural sector during the analyzed period (2021–2023). Analyzing the total number of disclosures on agricultural activity, we found an *av*DS of 2.79. This indicates that, on average, Serbian agricultural companies disclosed only two to three pieces of information (out of the eight analyzed mandatory disclosures) related to biological assets. Although these financial statements are presented as "compiled in accordance with IFRS" they clearly fail to fulfill their primary objective—providing users with relevant and faithfully represented information for decision-making.

These findings suggest a general lack of commitment to transparent financial reporting by company management. However, given the characteristics of the local financial reporting environment, this outcome is not surprising. Like any other “good”, the quality of financial information is expected to ultimately be shaped by the forces of supply and demand. When companies do not perceive tangible benefits from increased financial transparency (such as a lower cost of capital or the success of an IPO) their disclosure policies are likely influenced by other considerations, such as cost-cutting or tax management. This is especially true in a setting where the preferences of financial statements users are uncertain, where the management frequently stays silent, safely hiding in the “shadows of opacity” (Bond and Zeng, 2022, Wang and Zhang, 2025).

Building on previous studies on company-level determinants of financial reporting quality, we find that transparency in disclosures is higher among companies applying IFRS, those audited by a Big 4 firm, companies with diversified ownership, and subsidiaries of foreign parent companies. However, our findings regarding the impact of company size and legal form on financial reporting quality remain inconclusive. Similarly, we do not find a clear relationship between a company’s level of transparency (or lack thereof) and the type of auditor’s opinion on its financial statements. This suggests that auditors may fail to recognize or address compliance shortcomings. However, it is also possible that the biological assets of the analyzed companies were not materially significant from an audit perspective.

We believe our study provides valuable insights for various capital market participants by highlighting the importance of transparency in financial reporting. Existing and potential capital providers (as the primary users of financial statements) may be reminded of the need to assess the quality of financial reports before making investment decisions. Additionally, company management could be encouraged to improve compliance and financial transparency to secure new financial resources on favorable terms. Regulatory authorities may recognize the necessity of developing effective enforcement mechanisms to ensure that IFRS standards are properly reflected in financial statements, delivering high-quality information to their intended users. Finally, we aim to raise awareness among accounting academics and practitioners about the importance of enhanced education in agricultural accounting.

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Conflict of interests

The authors declare no conflict of interest.

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