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How accounting for investment subsidies influences financial performance: an empirical analysis of IAS 20 and Czech accounting legislation*

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Abstract

Our paper focuses on investment subsidies and the impact of accounting methods on financial ratios. Accounting for investment subsidies in Czechia is subject to national legislation and international accounting standards, such as the IAS20. This standard offers two options for capturing subsidies on assets – as deferred income or by reducing the book value. Czech accounting legislation allows only the second method mentioned. The essence of our article is to evaluate to what extent the alternative accounting of investment subsidies using accruals would be reflected in the financial ratios. The dataset consists of 277 enterprises that received an investment subsidy. Enterprises are from the agricultural sector that is subsidised for many reasons. The analysis is focused on testing the differences in the financial ratios according to financial statements compiled according to Czech accounting legislation and based on accounting allowed by IAS 20. The results indicate a higher significance of the subsidy for smaller companies. The impact of the change in the accounting procedure on financial ratios was statistically significant; on average, their values decreased by 2.8%. For the smallest businesses, the transition to accounting for subsidies using deferred income would be the most significant, with an average reduction of 5.5%.

Keywords: *accounting, subsidies, assets, IFRS, IAS20*

JEL classification*: M41, Q14, H25*

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1. Introduction

Investment subsidies are funds provided to investors to finance their investment projects. These grants can come from various entities, including governments, foundations, international organizations, and private investors. Accounting for investment grants includes accounting records and reporting of financial flows within the investment project. Investment subsidies can finance the costs of purchasing assets and buildings, modernizing technologies, or operating an investment project. Investment subsidies can be provided through direct payments, interest, or tax credits.

The strategic importance of agriculture, the specific nature of agricultural business, and its non-production effects on the environment justify subsidies in agriculture. The question of investment in agriculture is important because current agricultural output is a function of several inputs, including the current level of capital, which depends on past investment decisions. Investment decisions affect current and future production, so any policy that increases investment will affect agricultural production for several years ahead (Sckokai and Moro, 2009). Investment support represents not only the possibility of expanding new assets but especially in post-transforming countries, where the growth rate of investment subsidies is the highest, as well as the renewal of long-depreciated assets (Svoboda et al., 2016).

Accounting records of investment subsidies are essential for monitoring the investment project's effectiveness and providing information to the investors who finance the project. Investors and grant providers want to see that the investment grants are used efficiently and that the project generates enough income to repay the loan or ensure a return on investment (Kállay and Takács, 2023).

The accounting reporting of investment subsidies is essential, as they can affect the profit and loss statements, balance sheet and cash flow of the investment project and the entire company. Countries and regions use different approaches to accounting for investment subsidies because national accounting and tax regulations differ (Jermakowicz, 2004; Lantto and Sahlström, 2009; Stadler and Nobes 2018).

Accounting for investment subsidies in the Czech Republic is subject to national accounting legislation and international accounting standards, such as International Accounting Standard IAS 20 – Accounting for Government Grants and Disclosure of Government Assistance. This standard defines how to account for government subsidies to ensure they are correctly recorded and presented in the financial statements. IAS 20 offers two options for capturing grants on assets. The first method reports the subsidy as accruals, and the second method subtracts the subsidy when calculating the asset's book value (IFRS, 2024). Czech accounting legislation allows only the second method mentioned. From the above, the research question arises to what extent the alternative accounting of investment subsidies (i.e., the first method) would be reflected in companies' financial statements and whether

it would significantly affect the values of financial ratios and synthetic models for evaluating companies. Our research aims to answer this research question. This article contributes to the literature on the economic consequences of partial IFRS/IAS adoption by examining the impact of this adoption on key financial indicators. The conclusions of this study can be used by authorities that define the legal framework of accounting.

The structure of the subsequent text is as follows. In the Previous research chapter, we focus on the context of accounting in the Czech Republic, the accounting and reporting of subsidies, the impact of international accounting standards, and the importance of subsidies in agriculture. The Data and Methods chapter presents the sample file on which the analysis is processed, the modifications made to the financial statements, and the evaluated financial indicators. The Results chapter provides information on the importance of investment subsidies and the impact of alternative accounting on financial ratios. Discussion and Conclusion chapters follow.

2. Previous research

In this chapter, we focus on four areas of existing research. First, we present the context of Czech accounting, followed by information on the accounting and reporting of subsidies, the impact of IFRS, and the importance of subsidies in agriculture.

2.1. The context of accounting in the Czech Republic

After 1989, Czechoslovakia transformed from a centrally planned economy towards a market-oriented economy. Legislation has been modified to conform to Western standards. Under the influence of the Austrian roots of the old commercial code and modelled after German commercial law, several legal regulations related to business were introduced. This legislation also includes requirements for annual financial statements. In the following years, it was significantly amended, primarily to bring Czech accounting closer to IFRS (Choi and Meek, 2008). Accounting in the Czech Republic is thus influenced by the Accounting Act (Parliament of the Czech Republic, 2024), Czech accounting standards, decrees of the Ministry of Finance and other legal regulations (e.g. the Business Corporations Act and other tax laws). Financial statement audits are required for large, medium and some small companies. The audit aims to ensure that the accounts are kept by applicable laws and regulations and that the financial statements provide a true and fair view of the company's financial situation and results. The financial statements must include a balance sheet, a profit and loss statement, and an appendix to the financial statements. Depending on the size of the accounting unit, the financial statement also includes a cash flow statement and a statement of changes in equity. Small

companies that are not subject to audit have reduced disclosure requirements (Parliament of the Czech Republic, 2024; Ryneš, 2023). The Accounting Act requires an accounting entity that is a trading company and is an issuer of investment securities accepted for trading on a European-regulated market to use international accounting standards regulated by European Union law (Parliament of the Czech Republic, 2024) for accounting and drawing up financial statements.

2.2. Accounting and reporting of subsidies from public budgets

Within the framework of international accounting standards, the issue of reporting subsidies from public budgets is addressed by standard IAS 20 – Accounting for Government Grants and Disclosure of Government Assistance (IFRS, 2024). Stadler and Nobes (2018) state that IAS 20 was based on the British standard SSAP 4 (Accounting for Government Grants) of 1974. This standard required the grant to be recognized as revenue over the asset's life and allowed the choice of either showing the grant as deferred income or deducting the subsidy from the asset's value.

There are two alternatives to the accounting treatment of state subsidies according to IAS 20. The first method (income approach) recognizes the grant as deferred income that is recognized in profit/loss on a systematic basis over the life of the asset. The second method (capital approach) subtracts the subsidy when calculating the asset's book value. The subsidy is recognized in profit/loss over the entire useful life of the depreciable asset as a reduced depreciation expense. IAS 20 in section 32 (IFRS, 2024) regulates the return of the subsidy from the point of view of both approaches.

The IAS 20 standard (IFRS, 2024, par. 14) also lists the arguments for individual approaches. Proponents of the capital approach argue as follows:

> "(a) government grants are a financing device and should be dealt with as such in the statement of financial position rather than be recognised in profit or loss to offset the items of expense that they finance. Because no repayment is expected, such grants should be recognised outside profit or loss.
>
> (b) it is inappropriate to recognise government grants in profit or loss, because they are not earned but represent an incentive provided by government without related costs."

On the contrary, the arguments supporting the income approach are as follows (IFRS, 2024, par. 15):

> "(a) because government grants are receipts from a source other than shareholders, they should not be recognised directly in equity but should be recognised in profit or loss in appropriate periods.

(b) government grants are rarely gratuitous. The entity earns them through compliance with their conditions and meeting the envisaged obligations. They should therefore be recognised in profit or loss over the periods in which the entity recognises as expenses the related costs for which the grant is intended to compensate.

(c) because income and other taxes are expenses, it is logical to also deal with government grants, which are an extension of fiscal policies, in profit or loss."

Stadler and Nobes (2018) state that these two options are generally equally popular (52% of firms chose to present asset grants as deferred income). However, the choice is strongly linked to the country of the company's headquarters (i.e. the obligation to report according to national regulations). Nevertheless, for example, Martínez et al. (2011), for their sample of companies, state that 54 of them present the grant as a deferred income and 8 deducted from the asset. In contrast to IFRS, the requirements of the Czech accounting legislation in this area do not give the accounting entity a choice. Subsidies for the acquisition of fixed assets are only accounted for as a reduction in the book value of the given asset (i.e., the second method mentioned above). It is, therefore, necessary to reduce the property's purchase price by the subsidy provided, and depreciation is calculated from the reduced purchase price (Ryneš, 2023). E.g., accounting legislation in Slovakia (which, like in the Czech Republic, transformed in 1989) uses the above-mentioned first method (Ministry of Finances, 2024).

2.3. Impacts of IFRS and IAS

The number of research papers focused on the evaluation of the transition to International Financial Reporting Standards (IFRS) and its impacts in various areas is comprehensive and still growing, and it is possible to divide them into several directions (Kubíčková and Jindřichovská, 2012). One line of research deals with the effects of the adoption of individual IFRS standards (Lantto and Sahlström, 2009; Erin and Oduwole, 2019; Kabir and Su, 2022; López-Espinosa and Penalva, 2023); others focus on connections with capital market effects (Golubeva, 2020; Bessler et al., 2023); another focuses on the impact of the widespread adoption of IFRS, especially on the quality and comparability of accounting information (Jermakowicz, 2004; Martínez et al., 2011; Lueg et al., 2014; Adhikari et al., 2021; Nurunnabi et al., 2022; Wakil and Petruska, 2022; Lam et al., 2023), especially with regard to the national environment, existing accounting practices and the current form of accounting regulations. Other lines of research focus on the willingness of companies to implement IFRS and the effects of voluntary implementation (Jermakowicz and Gornik-Tomaszewski, 2006; Bertrand et al., 2022; Nguyen et al., 2023) or on the influence of experience with IFRS on the accuracy and timeliness of predictions (Barniv et al., 2022).

2.4. Importance of investment in agriculture

Investments in agriculture are crucial in ensuring food security and sustainability of the food sector. Investments in agriculture can bring many benefits (Bojnec and Latruffe, 2011), such as increasing yields and productivity, improving soil quality and protecting natural resources. According to the World Bank (World Bank, 2010), investment in agriculture can lead to significant poverty reduction in developing countries, as the poorest people in these countries depend on agriculture as their primary source of livelihood. The economies of post-transforming countries can have difficulties catching up with more developed economies and ensuring sustainable economic and rural development without investment support (Bojnec and Fertő, 2016).

The provision of investment subsidies in agriculture affects not only the competitiveness of the company (Fertő et al., 2021), but the main goal is sustainable agriculture and the production of safe food. Using new and precise technologies contributes to ecological food production, energy savings, careful water management, the transition to a zero-waste economy, and improves welfare and working conditions. It means that the goal of the Common Agricultural Policy is no longer to maximize productivity but, above all, to support and optimize across production, rural development, environmental, social justice and food consumption outcomes (Pretty et al., 2010). It should reward positive externalities associated with agricultural activity, stabilize the highly volatile incomes of farms, and contribute to the EU's food self-sufficiency (Frýd and Sokol, 2021). Farm investment decisions result from the combined influence of exogenous and endogenous factors (Minviel and Latruffe, 2016). Investments co-financed with EU funds are essential to supporting the farms' participation in the EU single market.

The support was intended to make farms more competitive through technical upgrades, the implementation of new technologies that may contribute to farming efficiency, and the better utilization of inputs (Sadowski et al., 2021).

However, investing in agriculture also brings certain risks such as market volatility, unpredictable climatic conditions and imbalances in supply and demand. According to the OECD (2009), the risks associated with investments in agriculture are high and include various factors such as political risk, volatile commodity prices, high market entry and exit costs, and climate risk. These factors can lead to large swings in investment returns that are difficult to predict. The development of technology has an increasing influence on the agricultural sector as well. Among other benefits, technology can help improve food production and reduce costs, leading to the increased profitability of agricultural investments (McFadden et al., 2022).

3. Data and methods

The analysis is carried out on a sample of agricultural enterprises, and its selection procedure is described below. Furthermore, the chapter describes adjustments to the accounting statements and financial ratios used.

3.1. Characteristics of the subsidy title

The selected subsidy title for investments was provided as part of the Rural Development Program 2014-2020, measure *M04 Investment in tangible assets*. The measure was aimed at increasing the competitiveness of small and medium-sized agricultural enterprises to contribute to the achievement of competitive agriculture, food and forestry, as well as to the achievement of sustainable management of natural resources (Ministry of Agriculture, 2015). As part of measure M04, operation 4.1.1-Investment in agricultural enterprises was selected, which includes investments in animal and plant production leading to the reduction of production costs, modernization or improvement of the quality of manufactured products, an increase in the efficiency of the use of production factors and easier access to new technologies with significant innovation potential where renewal is essential for further activity. The applicant for the subsidy could be an agricultural entrepreneur (i.e., an entity engaged in agricultural production under Act No. 252/1997 Coll., on agriculture).

The subsidies concerned, for example, stables and breeding facilities, storage capacities for plant production products, fodder, bedding or secondary products of animal production, investment in support structures for permanent crops, investment in buildings for horticulture, and the acquisition of mobile machinery. It is a direct, non-refundable subsidy of 40% of eligible expenses. This support rate could be increased by 10% for young beginning farmers and 10% for areas facing natural and other special constraints. The support rate could therefore reach a maximum of 60% of eligible expenditure. The amount of expenses from which the subsidy was determined was a minimum of CZK 100,000 and a maximum of CZK 150,000,000 per project (State Agricultural Intervention Fund, 2016). That is 3.9 to 585 thousand EUR.

3.2. Sample selection

Sample selection was divided into two steps:

1. The selection of enterprises is based on the allocated subsidies of the Rural Development Program 2014 – 2020: Operation 4.1.1 – Investments in agricultural enterprises. The highest number of companies (legal entities) that received this support and published their financial statements simultaneously was in 2018 (N = 277). Subsidies were provided based on the approved

applications submitted in the third round (receipt of subsidy applications from 11/10/2016 to 31/10/2016) and partly in the first round (reception of applications from 29/09/2015 to 12/10/2015).

2. In the next step, a manual search was done for the specific type of acquired property in the annex to the financial statements and in the text of the contract with the State Agricultural Intervention Fund, published on the hlidacstatu.cz portal. The reason is to determine the depreciation group of the acquired property. This data was obtained for N = 274 enterprises.

3.3. Sample description

Regarding legal form, 41.6% of these 274 enterprises are joint-stock companies, 27% are cooperatives, and 31.4% are limited liability companies. According to the CZSO (2021), there are 4,261 legal entities in Czech agriculture, of which 67.5% are limited liability companies, 15.6% are joint-stock companies, and 11.5% are cooperatives. From the point of view of size classification (based only on assets and turnover), the sample consists of 13.5% of micro companies, 73% of small companies and 13.5% of medium-sized companies. In terms of belonging to Areas with Natural Constraints (ANC), 60.2% of companies farm in these areas (for a rough comparison, according to the Ministry of Agriculture (2019), in the Czech Republic, 56.5% of agricultural land is in an ANC).

The primary statistical characteristics of the sample are presented in Table 1. The area of agricultural land was calculated based on received SAPS subsidies and their hectare rate. The table shows the high variability of all indicators.

Table 1: Basic characteristics of sample

Indicator	Mean	Std. Dev.	Minimum	Lower quartile	Median	Upper quartile	Maximum
Agricultural land [hectares]	1,479	1,349	0	564	1,213	1,966	9,086
Total assets	8,429	8,836	72	2,950	6,419	11,246	80,279
Long-term assets	5,505	6,020	12	1,842	3,844	7,105	63,650
Tangible long-term assets	5,199	4,974	12	1,804	3,754	7,067	40,045
Sales from products and services	3,510	4,915	2	1,065	2,455	4,300	61,162
Total revenues	4,804	6,024	30	1,584	3,447	6,287	66,994

Note: financial indicators in 1,000 EUR

Source: Author's calculations

In the analytical part, the results will be processed for the entire set and divided into four quartiles according to the volume of assets. The arrangement of objects according to assets is almost identical to the alternative measurement of the size of enterprises according to total revenues, where $r = 0.92$.

3.4. Adjustments made to financial statements

Answering the research question, i.e., to what extent the alternative accounting of investment subsidies (by income method) would be reflected in the financial statements of companies and whether it would have a significant effect on the values of ratios of financial analysis and synthetic models for evaluating companies, requires making several adjustments in the balance sheet and profit/loss statement. Specifically, the following adjustments are made:

- The investment subsidy is added to the value of long-term tangible assets and the deferred income, i.e., the balance amount will be increased by the amount of the investment subsidy.
- A depreciation group is designated for property acquired with subsidy support, and a proportional part of the subsidy is added to depreciation and to other operating revenue (where it represents the annual settlement of deferred income), i.e., the proportional amount is added to both costs and revenues without affecting profit/loss. When determining depreciation, we followed the Czech tax legislation, which includes most machines, trucks and tractors in the second depreciation group with a depreciation period of 5 years and buildings for agriculture in the fifth depreciation group with a depreciation period of 30 years. The State Agricultural Intervention Fund indicates only the total amount of the subsidy for the given measure. In order to find out what type of property it is specifically, it was necessary to find the data in the appendices to the financial statements or in the subsidy agreement. If the subsidy was provided for buildings and movable property, we work with both groups simultaneously. Although this is the depreciation period for tax purposes, and the actual depreciation period of the purchased property may vary between companies, we still use it as the most accurate possible estimate of accounting depreciation. The amount by which the annual depreciation and other operating revenue are increased is calculated as an investment subsidy for movable property divided by 5 and an investment subsidy for buildings divided by 30.
- The value of the property and the deferred income were adjusted (reduced) by annual depreciation.

The adjustments to the financial statement items described above will, therefore, be reflected in the financial statements:

- Balance sheet – assets: the value of long-term tangible assets (buildings or movable property) and total assets (and therefore the change in asset structure).
- Balance sheet – equity and liabilities: the value of accruals (deferred income) and the total equity and liabilities (and thus the change in the structure of liabilities).
- Profit and loss statement: the value of depreciation, other operating revenues, total costs and total revenues.

Czech companies keep accounts in the national currency (Czech crown), and the results are converted to euros at the average exchange rate of 2018, i.e., 1 EUR = 25.643 CZK (CNB, 2024).

The analytical part of the text is focused on testing the differences in the values of the ratios determined based on financial statements compiled according to Czech accounting legislation and based on alternative accounting allowed by IAS 20. These are the following financial ratio indicators. From a large set of financial ratios (e.g., Marek, 2009), we focused on those related to assets, subsidies and their accounting.

- Profitability (profit/loss is unaffected, total capital is affected)
  - Return on Assets = Profit before interest and taxes / Total Assets
  - Long-term profitability = Retained Profit / Total Assets
- Turnover ratios (assets and total revenues are affected, sales for products are not)
  - Total Assets Turnover_R = Total Revenues / Total Assets
  - Total Assets Turnover_S = Sales from Goods, Products and Services / Total Assets
  - Fixed Assets Turnover_R = Total Revenues / Fixed Assets
  - Fixed Assets Turnover_S = Sales from Goods, Products and Services / Fixed Assets
- Liquidity. If liquidity is measured using Current, Quick or Cash ratio indicators, its value is unaffected.
  - Net Working Capital-to-Assets = Net Working Capital / Total Assets
- Indebtedness – changes in equity and debt structure (increasing of deferred income and total equity and debt)
  - Debt ratio = Total Debt / Total Assets
  - Equity-to-Debt ratio = Equity / Total Debt

– Assets and capital structure:
  - Share of Fixed Assets = Fixed Assets / Total Assets
  - Long-term coverage of Fixed Assets = (Equity + Long-term Debt) / Fixed Assets
– Depreciation-to-Revenues ratio = Depreciation / Total Revenues
– Prediction models:
  - Altman's Revised Z-Score model (Altman, 2002)
  - G-index – this is a model focused on the financial situation of agricultural enterprises (Gurčík, 2002)

The influence of alternative accounting of investment subsidies on the values of financial ratios and synthetic models is assessed in terms of pretest (actual values of indicators, *O*) – post-test (values of indicators based on alternative accounting, *A*) using a paired *t*-test, where for each indicator it is tested hypothesis

$$H0: \mu_O - \mu_A = 0. \quad (1)$$

4. Results

Subsidies for the acquisition of assets are important for some companies; for others, they are of relatively minor importance. In a sample of 274 farms, the investment subsidy ranged from EUR 2.8 thousand to EUR 1.95 million, with an average of EUR 181 thousand and a median of EUR 75.1 thousand. Most often, the subsidy ranges from EUR 0 to 50,000 (36%) and EUR 50,000 to 100,000 (27%).

165 enterprises were given subsidies for construction (reconstruction or new construction), and 125 enterprises were given subsidies for purchasing machines (16 enterprises both). Subsidies for buildings are higher than subsidies for machinery (average 248.6 versus 68.7 thousand EUR; median 100.5 versus 38.2 thousand EUR).

4.1. Significance of the investment subsidy for the company

The importance of the subsidy for the company must be assessed relatively, i.e., concerning, for example, total assets, fixed assets or equity. The median subsidy to assets was 1.6%, to tangible fixed assets 2.6%, and to equity 2.3%. Subsidies for buildings were more significant than for machines (Table 2). Table 2 shows the medians due to the skewness of the values. From the point of view of the distribution of the subsidy on assets, the value was most often under 1% (35.8% of enterprises). Stadler and Nobes (2018) examined how subsidies are accounted for in

15 countries, with an average subsidy to equity of 3.5% and significant differences across sectors.

Table 2 also shows the significance of the subsidy in 4 size groups. It can be seen that the value of the subsidy relative to assets or fixed assets or equity is the highest for small businesses (1st quartile).

Table 2: Medians of relative value of subsidy (in %)

Subsidized assets	Subsidy to														
	Tangible fixed assets					Assets					Equity				
		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
Buildings	3.51	7.85	3.57	3.65	1.75	2.16	4.92	2.13	2.45	0.99	3.21	12.03	2.87	3.33	1.45
Machineries	1.45	5.51	1.74	0.97	0.73	0.91	3.08	1.05	0.57	0.44	1.46	7.89	1.57	0.87	0.56
Both	3.23	*7.90*	*2.53*	*0.76*	*3.93*	1.91	*5.07*	*1.59*	*0.45*	*2.60*	2.93	*9.20*	*2.57*	*0.67*	*3.83*
Total	2.59	6.53	2.80	1.88	1.30	1.60	3.85	1.64	1.06	0.69	2.32	9.20	2.61	1.98	0.99

Note: *Italics* = less frequent data

Source: Author's calculations on dataset

4.2. Impacts of alternative accounting for investment subsidies

In Table 3, we can find the results obtained when the enterprises were not analysed in detail. In summary, there were statistically significant differences in the values of the indicators when they were calculated using the previous subsidy accounting (pretest) and the potential income method (post-test). Out of the 14 indicators evaluated, only three showed an increase: the debt ratio by 3.7%, depreciation-to-revenues ratio by 3% and share of fixed assets by 1.6%. For the other indicators, a decrease was observed, which was the highest for equity/debt with almost -11% and for the turnover of fixed assets -6.1% (for the ratio working with revenues) and -5.6% with sales (the higher value of assets in the denominator). Synthetic models also showed a decrease in value, with G-index down -3.1% and Z-score down -7.3%. The relative differences between pretest and post-test values averaged -2.8%.

Table 3: Pretest a post-test values of financial ratios

Indicator	Mean Pretest	Mean Post-test	Difference	*t*	*p*-level
Return on Assets	0.0424	0.0413	-0.00109	-7.29	0.000
Long-term profitability	0.3875	0.3787	-0.00882	-11.80	0.000
Total Assets Turnover$_R$	0.4171	0.4056	-0.01156	-10.80	0.000
Total Assets Turnover$_S$	0.5701	0.5565	-0.01359	-10.84	0.000
Fixed Assets Turnover$_R$	0.7594	0.7132	-0.04614	-3.42	0.000
Fixed Assets Turnover$_S$	1.0187	0.9616	-0.05710	-3.52	0.000
Net Working Capital-to-Assets	0.1942	0.1897	-0.00452	-6.54	0.000
Debt ratio	0.3942	0.4088	0.01456	13.52	0.000
Equity-to-Debt	3.0671	2.7302	-0.33702	-5.35	0.000
Share of Fixed Assets	0.6266	0.6365	0.00985	12.35	0.000
Long-term coverage of Fixed Assets	1.4133	1.3877	-0.02567	-3.33	0.001
Depreciation-to-Revenues	0.1393	0.1434	0.00416	9.69	0.000
Z-score	2.3038	2.1366	-0.16718	-6.24	0.000
G-index	1.3031	1.2634	-0.03976	-11.22	0.000

Note: N = 274 for each indicator

Source: Author's calculations on dataset

Based on the results in Table 3, it is clear that the subsidy has a greater impact on companies with fewer assets. To provide more details on how this affects financial ratios, we have included a breakdown for individual groups of companies in Table 4. The data confirms that the transition to the new subsidy accounting method would have the most significant impact on companies in the Q1 group (i.e., those with the smallest amount of assets), with average indicator values being 5.5% lower. On the other hand, the Q4 group (with the highest volume of assets) shows an average decrease in indicators of 1.4%. Except for the debt ratio (with the highest relative difference in Q2), the inverse relationship applies to all examined indicators, where the most significant impact was for the smallest enterprises. Detailed results of the relative difference between the pretest and post-test values are shown in Figure 1.

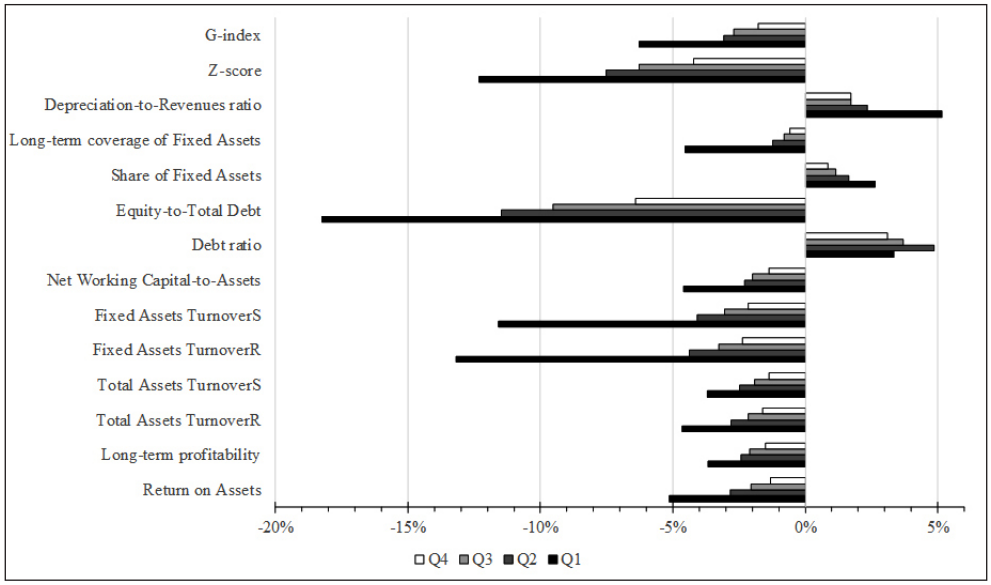
Table 4: Pretest and post-test values of financial ratios detailed by company size

Indicator	Q1			Q2			Q3			Q4		
	Mean Pretest	Mean Post-test	Difference and *p*-level	Mean Pretest	Mean Post-test	Difference and *p*-level	Mean Pretest	Mean Post-test	Difference and *p*-level	Mean Pretest	Mean Post-test	Difference and *p*-level
Return on Assets	0.0295	0.0280	-0.0015**	0.0455	0.0442	-0.0013***	0.0436	0.0427	-0.0009***	0.0511	0.0505	-0.0007***
Long-term profitability	0.2522	0.2430	-0.0092***	0.4303	0.4199	-0.0105***	0.4284	0.4194	-0.0090***	0.4402	0.4336	-0.0066***
Total Assets $Turnover_R$	0.3789	0.3613	-0.0176***	0.4756	0.4623	-0.0133***	0.3954	0.3868	-0.0085***	0.4191	0.4124	-0.0067***
Total Assets $Turnover_S$	0.5725	0.5514	-0.0211***	0.6248	0.6093	-0.0155***	0.5329	0.5227	-0.0102***	0.5505	0.5430	-0.0075***
Fixed Assets $Turnover_R$	0.8268	0.7179	-0.1089*	0.8342	0.7976	-0.0366***	0.6551	0.6337	-0.0214***	0.7209	0.7038	-0.0171***
Fixed Assets $Turnover_S$	1.1804	1.0437	-0.1367*	1.0869	1.0426	-0.0443***	0.8735	0.8469	-0.0266***	0.9329	0.9127	-0.0202***
Net Working Capital-to-Assets	0.1209	0.1153	-0.0055*	0.2528	0.2470	-0.0058***	0.2000	0.1961	-0.0040***	0.2042	0.2014	-0.0028***
Debt ratio	0.5517	0.5701	0.0184***	0.3340	0.3503	0.0163***	0.3632	0.3766	0.0134***	0.3268	0.3369	0.0101***
Equity-to-Debt	2.4276	1.9843	-0.4433*	3.4529	3.0568	-0.3961***	3.1776	2.8749	-0.3027**	3.2178	3.0114	-0.2064***
Share of Fixed Assets	0.6259	0.6425	0.0166***	0.6098	0.6199	0.0100***	0.6409	0.6484	0.0074***	0.6298	0.6351	0.0053***
Long-term coverage of Fixed Assets	1.4341	1.3691	-0.0651*	1.4903	1.4717	-0.0186***	1.3531	1.3424	-0.0107***	1.3762	1.3681	-0.0080***
Depreciation-to-Revenues	0.1823	0.1917	0.0094***	0.1264	0.1293	0.0030***	0.1336	0.1359	0.0023***	0.1146	0.1165	0.0020***
Z-score	1.7896	1.5693	-0.2203*	2.6121	2.4154	-0.1967***	2.3710	2.2221	-0.1489***	2.4479	2.3448	-0.1031***
G-index	0.7543	0.7069	-0.0474***	1.4939	1.4479	-0.0459***	1.4108	1.3728	-0.0380***	1.5579	1.5301	-0.0278***

Note: *** is p-level < 0.001, ** is p-level < 0.01, * is p-level < 0.05

Source: Author's calculations on dataset

Figure 1: Relative difference between pretest and post-test values



Source: Own calculations on dataset

5. Discussion

Subsidies are financial resources provided to entities from public sources to support their activities. In the case of businesses, subsidies are often used to finance investment projects, research and development, employee training, or to support employment. Research deals with the effects of subsidies on the financial health of businesses and its components. These studies mainly examine the effect of subsidies on companies‘ growth, productivity, profitability, and the level of indebtedness. One of the significant findings is that subsidies can have a significant positive and negative impact on the growth of businesses (Bernini and Pellegrini, 2011; Kállay and Takács, 2023; Takahashi and Hashimoto, 2023). Businesses that receive subsidies often have better financial results than those that do not receive support. However, even companies with a relatively poor performance apply for subsidies, gaining a competitive advantage against non-subsidized companies (Kállay and Takács, 2023). Subsidies can help businesses remove financial constraints that bind their investment activities. Subsidies thus enable companies to finance projects that they would otherwise not be able to implement, thus increasing their competitiveness in the market (Colombo et al., 2013; Svoboda et al., 2016). Obtaining subsidies can allow businesses to diversify their business and enter new areas, which can lead to greater profitability (Blažková, 2016; Lososová and Zdeněk, 2023-a; Kumbhakar et al., 2023). However, subsidies can also be associated with negative impacts. Businesses that depend on subsidies

may lose motivation to improve their results and innovate. If a business cannot be competitive without subsidies, it may find itself in financial trouble after the flow of funds from the subsidy ends. Atzeni and Carboni (2006) concluded that small firms make the best use of grants, while subsidies for medium and large firms seem to be only substitutes for more expensive sources of financing. It follows that the effects of subsidies on corporate finances depend on many factors, such as the size of the subsidy, the area in which the businesses operate, and how dependent businesses are on subsidies. However, most research shows that subsidies can help businesses grow and improve their performance if they are correctly targeted, and businesses can maintain their performance after the subsidies end.

For projects whose eligible expenses exceeded CZK 1,000,000 (Ministry of Agriculture, 2017; approximately EUR 39,000), the application for a subsidy included an assessment of the company‘s financial health based on the State Agricultural Intervention Fund methodology (State Agricultural Intervention Fund, 2018). Three companies in our sample have negative equity, i.e., they are over-indebted companies whose liabilities exceed the value of total assets. Their eligible expenses exceeded the limit and were subject to a financial health assessment. However, in the Lososová and Zdeněk (2023-b) study, this model provides the most favourable assessment of enterprises compared to alternative models. As a possible solution, it is proposed to regularly update the financial health assessment model and assess the financial health of applicants even for smaller projects (the administrative burden of financial health assessment is very low).

Financial statement disclosure practices are generally insufficient to allow investors and analysts to compile comparable financial statements (Stadler and Nobes, 2018), which is true not only at the national but also at the international level. Czech financial reporting is strongly influenced by tax legislation, which reduces the usefulness of financial statements for external users‘ decision-making. Entities reporting according to local accounting standards then remove these deficiencies at the level of managerial accounting so that they can prepare the information needed for internal management and decision-making (Procházka, 2010). Czech accounting legislation is oriented towards creditors/stakeholders and is based on the accounting model of historical prices, while IAS is shareholder-oriented and generally perceived as a fair-value accounting model that emphasizes balance sheet valuation (Hung and Subramanyam, 2007). The adoption of international standards is perceived as improving financial transparency and comparability of financial statements among European firms (Lantto and Sahlström, 2009). The method of reporting government subsidies, according to IAS20, then depends primarily on the method of reporting according to national standards in a given country (Stadler and Nobes, 2018).

Our findings revealed a statistically significant impact of simulated variant accounting on ratios of profitability, turnover, indebtedness and synthetic models. The majority (11 out of 14) of the monitored ratios‘ values were reduced (on

average by almost 3%) when the income method was applied. When classifying the examined sample in more detail, the smallest enterprises are the most sensitive to the transition to the income method of accounting for capital subsidies.

These results differ from previous studies such as Erin and Oduwole (2019) or Perramon and Amant (2006), where the introduction of IFRS did not significantly impact profit or profitability indicators. Pereira et al. (2015) investigated the effects of changing the accounting of the subsidy (originally as an accrual account, after the transition to the new standards, subsidies are reported in equity) on financial stability with mixed results. In the study by Kubíčková (2011), most companies showed lower Z-score values based on financial statements according to IFRS compared to national accounting legislation.

Perramon and Amat (2006) discuss the harmonization and standardization of accounting. They define accounting harmonization as a process that increases the comparability of financial statements in different dimensions, i.e., across time and countries, while standardization imposes stricter and narrower accounting rules (associated with a lower number of available accounting methods). In the context of standardization, Stadler and Nobes (2018) concluded that the choice of accounting method should be removed from IAS 20 because international differences and poor disclosures have an adverse impact on international comparability. Our results can help estimate the effects of cancellation of the option of accounting for received capital subsidies.

In reality, the chosen depreciation method (linear, progressive or degressive methods) plays an important role here, which, in the case of the income method of accounting for subsidies, has a depreciation base of the total input price. The amount of depreciation is higher compared to the original method of accounting for subsidies (by reducing the input price), and to a large extent, it is thus possible to optimize profit/loss according to the current needs of management.

The results of this study should be treated with caution as they are subject to several limitations. In our study, we focused only on depreciable assets. It resulted from selecting a subsidy title, which was mainly focused on acquiring equipment, technologies and buildings for animal and plant production of agricultural enterprises. There is another limitation associated with this, which results from the focus only on agricultural enterprises. However, focusing on the subsidy title for agricultural enterprises allowed for the compiling of a sufficiently large data set. Nevertheless, our results may be generalizable to other industries with a similar share of investment subsidies. Thus, further research with a similar methodology could focus on verifying the validity of our conclusions for different types of subsidy titles as well as other sectors (e.g., manufacturing). Another follow-up research can assess the connection between the method of reporting subsidies and its effect on the effectiveness of investments.

6. Conclusion

Investment subsidies are an essential source of financing for investment projects (not only) in agriculture, and their correct accounting and reporting are crucial for monitoring the financial health of the project and the enterprise and providing information to investors and other interested parties.

The agricultural sector plays an irreplaceable role in food production. Efforts to continuously adjust the Common Agricultural Policy within the EU lead to the distribution of funds to ensure food security and fulfil other objectives. If agricultural enterprises did not receive subsidies, they would be unable to invest in modern technologies, they would find themselves at a loss, and food production would be threatened. Concerning our results, in this sector, our study demonstrated the impacts of accounting methods on financial analysis indicators that are both statistically and economically significant – changes in selected financial ratios reduced values by almost 3%. When broken down in more detail, the impacts were most pronounced for companies with the smallest volume of assets, where the relative decrease in ratios was 5.5% on average.

The effects of subsidies on the financial health of businesses depend on many factors, such as the size of the subsidy, the area in which the business operates, and how dependent the business is on subsidies. Subsidies can help businesses grow and improve their performance, but they can also lead to dependency and reduce the incentive to innovate. If subsidies are appropriately targeted and used correctly, they can significantly contribute to businesses‘ financial health and growth.

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Kako računovodstvo investicijskih subvencija utječe na financijski učinak: empirijska analiza MRS-a 20 i češkog računovodstvenog zakonodavstva

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Sažetak

Fokus našeg rada su investicijske subvencije i utjecaj računovodstvenih metoda na financijske pokazatelje. Računovodstvo investicijskih subvencija u Češkoj podliježe nacionalnom zakonodavstvu i međunarodnim računovodstvenim standardima (MRS), kao što je MRS20. Ovaj standard nudi dvije mogućnosti za uključivanje subvencija na imovinu – kao odgođeni prihod ili smanjenje knjigovodstvene vrijednosti. Češko računovodstveno zakonodavstvo dopušta samo drugu spomenutu metodu. Središnja tema našeg članka je procijeniti u kojoj bi se mjeri alternativno računovodstvo investicijskih subvencija korištenjem obračunskih razdoblja odrazilo na financijske pokazatelje. Skup podataka sastoji se od 277 poduzeća koja su primila investicijsku subvenciju. Poduzeća su iz poljoprivrednog sektora koji je subvencioniran iz više razloga. Analiza je usmjerena na testiranje razlika u financijskim pokazateljima prema financijskim izvještajima sastavljenim u skladu s češkim računovodstvenim zakonodavstvom i na temelju računovodstva dopuštenog MRS-om 20. Rezultati istraživanja ukazuju na veći značaj subvencije za manja poduzeća. Utjecaj promjene računovodstvenog postupka na financijske pokazatelje bio je statistički značajan; u prosjeku su im se vrijednosti smanjile za 2,8%. Za najmanja poduzeća prelazak na računovodstveno obračunavanje subvencija korištenjem odgođenog prihoda bio bi najznačajniji, uz prosječno smanjenje od 5,5%.

Ključne riječi*: računovodstvo, subvencije, imovina, MSFI, MRS20*

JEL klasifikacija*: M41, Q14, H25*

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