Economic Drivers of Sustainability in the Textile Industry

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Abstract: The economic drivers of today's enterprises include the efficient use of resources (natural and other), while maintaining good economic results. This perspective is essential today for maintaining corporate competitiveness within the industry and internationally. This paper focuses on assessing the relationship between economic value added (EVA) and resource productivity. The textile industry is one of the most resource-intensive and globally interconnected industries. This industry is also facing growing pressure to integrate sustainability. An empirical analysis of companies in the textile industry in the Czech Republic has shown that companies with positive economic value added (EVA) not only achieve higher profitability but also exhibit a more sustainable long-term management style, as measured by resource productivity. Although average resource productivity values indicate different levels depending on EVA creation, this fact could not be statistically confirmed.

Keywords: Economic value added, companies, resource productivity, textile industry.
JEL Classification: D24, E23, G01

1 Introduction

The textile industry is one of the most resource-intensive sectors in the global economy. High consumption of water, energy, and chemicals, extensive greenhouse gas emissions, and waste generation are common features of the manufacturing process. At a time when environmental regulations are tightening, consumer preferences are shifting toward sustainable products, and investors are placing increasing emphasis on environmental, social, and governance (ESG) criteria, companies in the textile sector are facing growing pressure to integrate sustainability not only as a mandatory component of compliance, but as a strategic element of their business activities. Reducing overproduction in the textile industry is inevitable. The textile industry, including the clothing industry, must start moving towards sustainability and adopt circular solutions. For companies in the textile industry, an effective solution may be to transition to a circular economy model that takes into account all stages of the production cycle – from working with renewable resources to providing transparent information to customers. The main effort is to implement sustainability criteria for textile production, but also to improve textile waste collection, sorting, and more efficient recycling. These activities are supported, for example, by the EU's LIFE grant program, whose subprogram "Circular Economy and Quality of Life" focuses precisely on "Improving the traceability of exports of used textiles/textile waste and improving the recycling of textile waste within the EU."

Existing research highlights various dimensions of sustainability: environmental (emission reduction, resource consumption, waste management), social (working conditions, fair wages), and economic, which in many cases is considered a barrier but also a key driver of change. Economic factors such as profitability, productivity (Blažková et al., 2020)., input costs, innovation investment, and access to finance are key to understanding why and how companies are transitioning to more sustainable operations. This paper focuses on the economic drivers of sustainability in the textile industry. The analysis focuses on how they affect the economic performance of companies (profitability, productivity, costs). Although there is evidence of a positive relationship between sustainable innovation and the economic performance of textile companies, research still faces several limitations. There is a lack of uniform methodological approaches to measuring the economic benefits of sustainability, short-term analyses predominate, and most studies focus on selected regions (Dušek, 2018) outside Central Europe. Differences between small and large enterprises, the impact of financing availability, and the specifics of local markets are also insufficiently taken into account. Resource productivity is a basic indicator for assessing the efficiency of resource productivity.

Resource productivity is usually defined as the ratio of economic output to material and energy inputs. It is a key metric for assessing the "decoupling" of economic growth from raw material consumption. Higher material productivity, or

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resource productivity in general, indicates that a company or industry is creating more value with less input consumption, which is the goal of policies aimed at a circular economy (Setek et al., 2025) and sustainable growth. Empirical work at the country and sector levels shows that improvements in material productivity are consistently associated with increased competitiveness and better macroeconomic performance, with methodological approaches varying in the measurement of inputs and outputs (Flachenecker & Kornejew, 2018; Özbuğday et al., 2020).

There is growing empirical evidence that investments in increasing resource productivity (e.g., through material and energy savings, process innovations, or recycling) can lead to improved financial performance of companies. Studies in the field of environmental investment and corporate performance document positive relationships between resource efficiency and indicators of growth or company value; some studies also analyze the direct mechanism, i.e., lower operating costs, less exposure to commodity price risk, and better access to "green" financing. Together, these factors can increase the creation of corporate economic value added. These results support the hypothesis that higher resource productivity can translate into measurable economic value for a company, although the magnitude of the effect depends on the context, type of industry, and performance measurement (Özbuğday et al., 2020; Dangelico & Vocalelli, 2017; Wen et al., 2023).

In the context of the textile industry, where material and energy intensity and pressure to recycle are particularly high, theoretical and empirical work on the impact of circular practices suggests that targeted increases in resource productivity have the potential to improve value creation indicators such as EVA. At the same time, the literature on the circular economy and sustainable innovation in the apparel sector shows that benefits are often realized in the medium term and require support (both technological and political) to overcome barriers; This means that investments in resource productivity can increase the long-term economic value of companies if they are accompanied by systemic measures (e.g., financing, improved collection and recycling, technical standards). From this perspective, empirical research into the link between resource productivity and EVA in the textile sector is extremely relevant for both policy and practice (Triguero et al., 2023; Ramírez-Escamilla et al., 2024; Chen et al., 2023).

2 Methods

The article focuses on economic factors of sustainability in the textile industry, measuring EVA (economic value added) and resource productivity. Data was drawn from the Orbis database for the years 2022 and 2023. The empirical data set includes data on 136 companies from the textile industry in the Czech Republic (NACE 13), which was analysed using selected indicators assessing both economic success (EVA) and the efficiency of material resources used (resource productivity). The aim was to obtain information on whether the economic success of a company is also related to higher use of material resources. The authors assume that economically successful companies invest more in innovation, improve technology, and thus save both energy and material resources, leading to an improvement in the resource productivity indicator. The economic success of companies was assessed using the economic value added (EVA) indicator and profitability indicators (ROA = operating profit/assets; ROE = earnings after taxes/equity). The EVA (Economic Value Added) indicator was calculated using the entity approach, with NOA (Net Operating Assets) used to express invested capital.

$$EVA=NOPAT-NOA\times WACC, \quad (1)$$

where:

NOPAT (Net Operating Profit After Taxes): NOPAT = earnings before interest and taxes * tax effect = $EBIT\times(1-t)$

NOA (invested capital): Operating assets − Operating liabilities.

Operating assets mainly include tangible and intangible fixed assets, inventories, short-term and long-term trade receivables, and other assets used for the main business activity (e.g., receivables from operating relationships).

Operating liabilities include trade payables (short-term and long-term), liabilities to employees, liabilities to social security and health insurance institutions, tax liabilities (not related to interest), and other operating liabilities.

$$WACC\ (Weighted\ Average\ Cost\ of\ Capital)=E/(E+D)*r\_e+D/(E+D)*r\_D*(1-t) \quad (2)$$

where

E = value of equity (from accounting); D = value of interest-bearing debt, r_e = cost of equity (estimated using CAPM, for example), rd = cost of debt (effective interest rate), t = tax rate.

The cost of equity (r_e) was estimated using the CAPM (Capital Asset Pricing Model):

$$r\_e=r\_f+\beta*(r\_m-r\_f) \quad (3)$$

r_f = risk-free rate of return (using the average half-yearly yield on Czech government bonds for the period 2014-2024, i.e. 2.27%)

β (beta) = sector risk – sector beta used for cyclical industries, which includes the textile industry in the Czech Republic 1.3

$r_m - r_f$ = market risk premium (8%).

Resource productivity at the company level was measured in the same way as at the national level, i.e., as the ratio of operating revenues to material and energy costs.

Companies were divided into two groups (companies generating economic value added, i.e., EVA>0, and companies with negative economic value added, i.e., EVA<0) and then analysed. The data were aggregated using contingency tables, and the average values of the analysed indicators were calculated for each group of enterprises. A two-sample t-test was used for static hypothesis testing, comparing the mean of the resource productivity variable between the two groups of enterprises.

$H0 : \mu_1 = \mu_2$, where μ_1 is the average resource productivity of companies generating EVA,

μ_2 is the average resource productivity of companies not generating EVA

$H1 : \mu_1 \neq \mu_2$.

3 Research results

First, the analysis focuses on the development of the number of economic entities in the Czech Republic in sector 13 – manufacture of textiles, and sector 14 – manufacture of wearing apparel (Table 1), particularly on barriers affecting the introduction of innovations.

Table 1 Number of economic entities in the Czech Republic

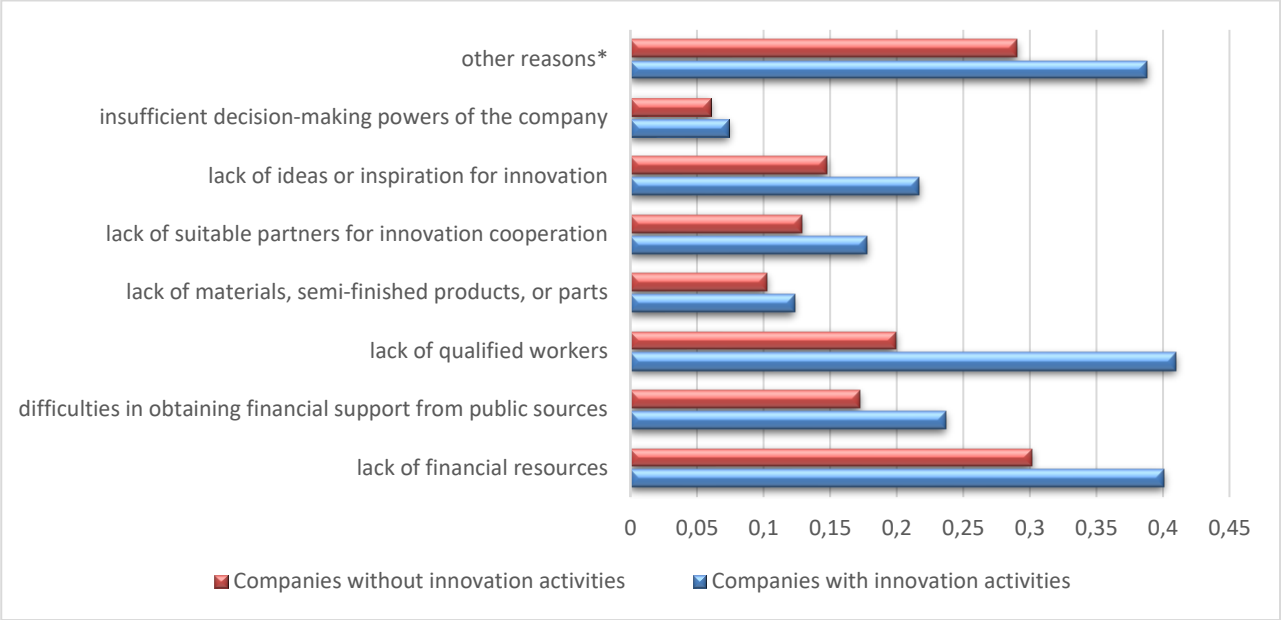
	Textile production		**Clothing production**	
	absolute	relative in %	absolute	relative in %
31.12.2021	3389	1.018	41662	12.521
31.12.2022	3210	0.950	42495	12.571
31.12.2023	2710	0.876	37396	12.571
30.06.2024	2656	0.857	37616	12.131

Source: own processing, Czech Statistical Office database

Table 1 shows that the number of economic entities classified as part of the textile industry in 2021–2024 is around 1% of all entities in the manufacturing industry and is declining in those years. A decline in entities can also be seen in the clothing industry. The reasons for this may include lower competitiveness (link to source), cheap products from third countries, etc.

Based on statistics (Eurostat, Czech Statistical Office) monitoring innovation activities, the impact of product innovations on the market in the textile and clothing industry was assessed (Figure 1). In this area, innovations were mainly focused on improving the quality of existing products and expanding the product range. Approximately 6% of innovations were primarily aimed at reducing negative environmental impacts. Chart 1 shows the factors that companies perceive as barriers to implementing or initiating innovation, both for companies that innovate and those that do not. Innovating companies consider the lack of skilled workers to be the biggest barrier, while non-innovating companies perceive the lack of financial resources as the biggest barrier.

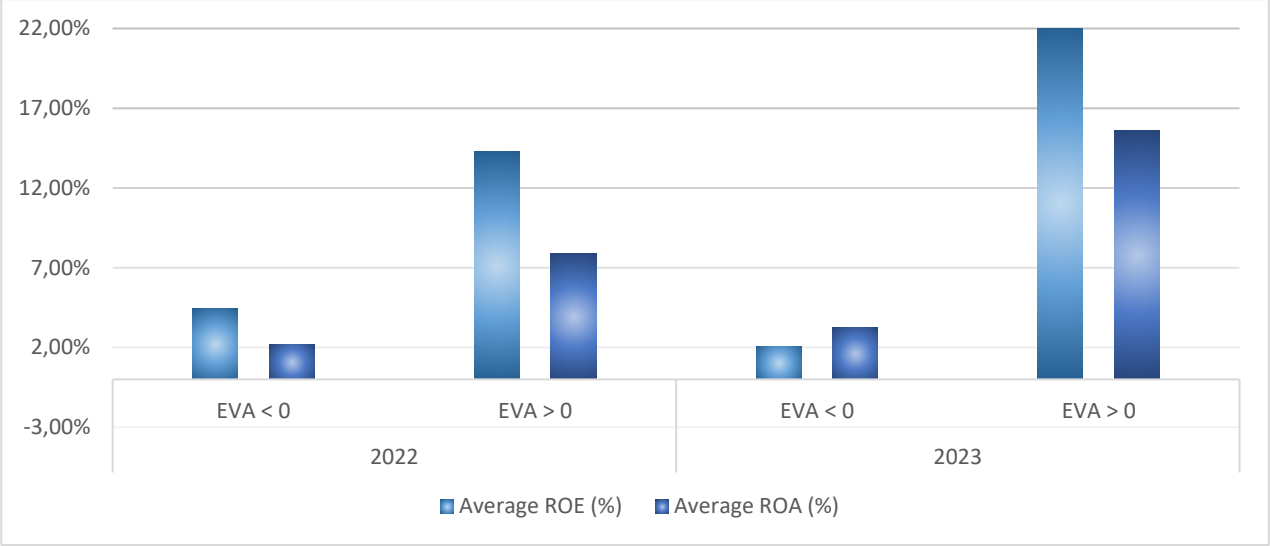
Figure 1 Factors limiting the implementation or initiation of innovation activities in the textile, clothing, and related industries (NACE 13-15) in 2020-2022



Source: Czech Statistical Office database

Analysis of the sample of company data revealed significant differences in performance and efficiency between the two groups of companies (those creating economic value added and those not creating economic value added). Differences were recorded in particular in profitability indicators (ROE, ROA) and resource productivity (Figure 2).

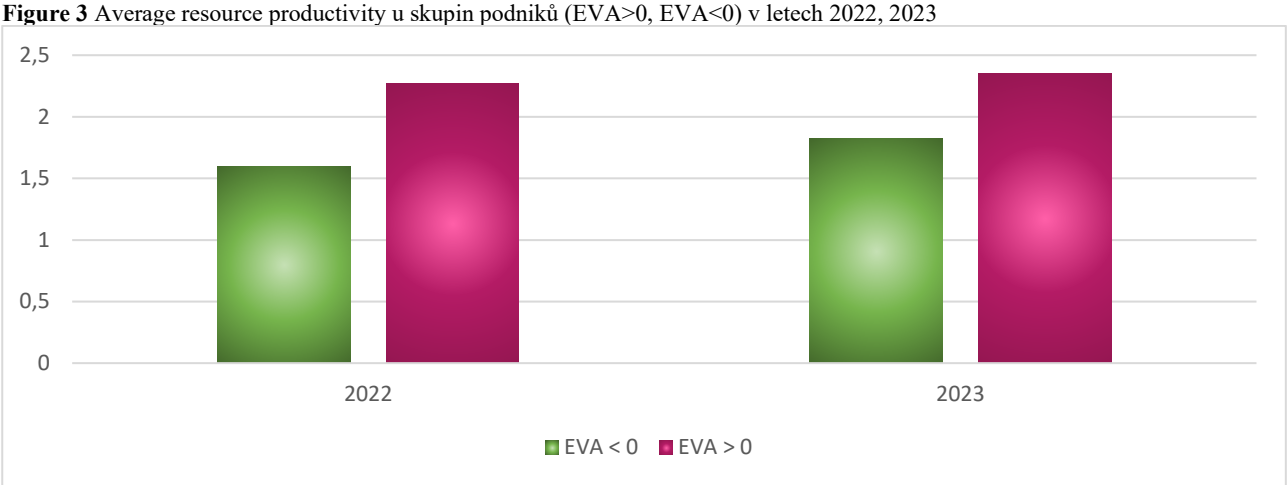
Figure 2 Profitability indicators for groups of companies (EVA>0, EVA<0) in 2022 and 2023



Source: own processing

In 2022, companies generating EVA achieved an average ROE of 14.27% and ROA of 7.88%, while companies not generating EVA had significantly lower indicators (ROE 4.43%; ROA 2.16%). In 2023, there was an overall improvement in profitability for both groups of companies (EVA-generating companies achieved ROE of 22.16% and ROA of 15.60%), which may be influenced by overall economic growth in the post-COVID period. The resource productivity indicator also shows differences between the two groups of companies (Figure 3).

Figure 3 Average resource productivity u skupin podniků (EVA>0, EVA<0) v letech 2022, 2023



Source: own processing

Figure 3 shows that resource productivity was higher in companies generating EVA (in 2022, it amounted to CZK 2.27 in revenue per CZK 1 in material costs and improved slightly in 2023). This difference can be interpreted as more efficient use of material and energy resources. The results suggest that EVA-generating companies should be able to make better use of available resources and respond more effectively to economic and operational challenges. In 2022, the lower values may have been partly influenced by the lingering effects of the pandemic crisis and increased energy costs. A t-test was then performed (Table 2).

Table 2 Student's -Test Two-sample t test

Variable	Average (EVA>0))	Average (EVA<0)	t	degrees of freedom	p-value	F-test (Variance)	p -value (Variance)
Resource productivity	12.74	7.90	1.17	270.00	0.24	1.31	0.13

Source: own processing

A t-test was then performed (Table 2). The group of companies creating economic value added achieves a higher average resource productivity (CZK 12.74) compared to companies not creating economic value added (CZK 7.90), equal variances assumed (F test, p-value 0.126 > 0.05).

Since the p-value is greater than 0.05, the hypothesis of equality of resource productivity averages cannot be rejected, i.e., the difference in averages cannot be considered statistically significant. Although it is possible to infer a significant difference based on the average resource productivity values, the t-test did not confirm this. The result would need to be verified on a larger sample of companies.

4 Conclusions

The paper focuses on assessing the link between economic value added and resource productivity. This perspective shows whether a firm not only creates economic value, but also does so efficiently and sustainably. Monitoring the link between these indicators is also important from the perspective of better strategic management and greater competitiveness in the international market. An empirical business analysis conducted on companies in the textile industry in the Czech Republic showed that companies with a positive EVA value not only achieve higher profitability, but also demonstrate a more sustainable long-term management style as measured by resource productivity. Their ability to convert consumed resources into economic value and maintain positive development of key financial indicators confirms that EVA creation is closely linked to the efficient use of resources and the principles of sustainable development. This conclusion is consistent with the results of a Spanish study by Córcoles and Triguero (2025), which found that investment in the circular economy and eco-innovation increases the performance of Spanish manufacturing companies. On the other hand, it should be noted that the importance of this type of textile industry in the overall economy is declining, with globalization and the liberalization of foreign trade being one of the significant factors, according to a study by Puig et al. (2023), one of the significant factors is globalization and the liberalization of foreign trade. Overall, it can be summarized that the results of the analysis confirm the hypothesis of a positive relationship between EVA creation and resource productivity. Companies that achieve positive EVA values not only generate higher profits for shareholders, but also demonstrate better environmental and operational

efficiency, which is a prerequisite for their long-term sustainability and competitiveness in the post-pandemic period. Although average resource productivity values indicate different levels depending on EVA creation, this fact could not be statistically confirmed. The primary limitation of the paper is the focus on only one sector of textile manufacturing with low number of observations, and the short time period when EVA was observed.

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