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Economic Inequality and the Size of Government Expenditure Shocks: An Empirical Exercise

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Abstract

Empirical literature explains the heterogeneity of fiscal multiplier estimates through the analysis of various cyclical and structural determinants of economies, with economic inequality, as one of the key structural characteristics, receiving relatively little attention so far. In this study, using a wide sample of countries and applying the vector autoregression methodology, we first estimated fiscal multipliers and the impact of fiscal stimuli on the dynamics of the price level. The findings indicate that the estimated fiscal multipliers are mostly positive, and fiscal stimuli tend to produce an inflationary effect. Subsequently, we examined the variability in the size of fiscal multipliers in relation to various indicators of income and wealth inequality. The key findings of this study reveal that as economic inequality increases, particularly in the context of income disparities, the size of fiscal multipliers also rises. This insight is particularly important for policymakers in designing appropriate fiscal measures in an evolving macroeconomic environment.

Introduction

Changing economic conditions have destabilized the institutional framework within which economic policy operates. Traditional approaches by monetary and fiscal policymakers have increasingly failed to ensure appropriate cyclical adjustments and stable economic growth. The experience of the debt crisis, accompanied by deflationary pressures and economic stagnation, followed by a sharp surge in inflation, has forced both monetary and fiscal policies to reconsider their strategies and adopt less conventional instruments. As a result, fiscal policy has regained prominence in its stabilizing role. This shift has been underpinned in academic literature by renewed discussions on the functioning of the fiscal multiplier mechanism, supported by updated estimates of fiscal multipliers. These estimates have revealed significant heterogeneity in multiplier values, prompting a focus on identifying the determinants contributing to this variability.

In recent years the empirical literature has extensively reported on the phenomenon of the variability in the magnitude of fiscal multipliers. The research work (e.g., Auerbach & Gorodnichenko, 2011; Ilzetzki et al., 2013; Koh, 2017) has been focused on examining both cyclical (business cycles) as well as structural factors (indebtedness, openness, and development) of government spending multipliers. One of the unexplored areas that continues to persist is the role of economic inequality as a determinant of the size of the fiscal multiplier. The current scientific literature primarily centers on examining various connections between economic growth and inequality (e.g., Moll et al., 2022) or the effects of economic policy actions on inequality, such as assessing the impact of fiscal contractions (e.g., Agnello & Sousa, 2012) or low-interest rate policies (e.g., Chen & Li, 2023) on income inequality. To date, the research by Brinca et al. (2016) is the only one that has identified a positive correlation between wealth inequality and the magnitude of fiscal multipliers. Later, Brinca et al. (2021) delved into a Eurozone fiscal consolidation episode and linked higher income inequality with a more severe recessionary impact of the applied austerity measures. In contrast, Auerbach et al. (2021) introduced a theoretical model suggesting that higher income inequality leads to smaller fiscal multipliers.

The aforementioned studies currently provide the sole insight into the understanding of the relationship between economic inequality and the magnitude of fiscal multipliers. To the best of our knowledge, this phenomenon has not been comprehensively investigated to the extent, form, and focus that we present in this article. Therefore, based on a new and extensive quarterly dataset using a vector autoregression (VAR) model, we initially estimate the size of fiscal multipliers for 47 countries and the associated effects of increased government spending on price level dynamics. Subsequently, we assess the impact of a large number of income and wealth inequality indicators on the magnitude of fiscal multipliers.

The remainder of the article is structured as follows: Section 2 offers a concise review of the literature, Section 3 introduces the model and describes the data used, Section 4 presents the results, and Section 5 concludes the article.

Literature Review

This chapter reviews key findings on how country-specific characteristics influence the size of fiscal multipliers. Blanchard and Perotti (2002) and Perotti (2004) laid the foundation for studying fiscal policy using vector autoregression methods. Their research highlighted positive government spending multipliers and negative tax multipliers in the U.S., with Perotti (2004) noting diminishing fiscal stimulus effects after 1980 in developed economies. Subsequent studies, including Giordano et al. (2007) and Burriel et al. (2019), affirmed the significant impact of discretionary fiscal policy on output in developed countries.

Further research underscored the importance of business cycle phases and structural factors. Auerbach and Gorodnichenko (2010, 2011) found higher multipliers during recessions, though Ramey and Zubairy (2014) observed no significant differences. Later empirical literature showed that structural characteristics also matter. Ilzetzki et al. (2013) found larger multipliers in developed, closed economies and smaller or negative multipliers in high-debt countries, while Hory (2016) linked multipliers to factors like unemployment and financial development. Koh (2017) noted larger multipliers during crises and in low-debt nations but challenged the idea that openness consistently reduces multipliers. Lastly, the global financial crisis emphasized the role of discretionary fiscal measures as monetary policy constraints increased (Auerbach & Gorodnichenko, 2017).

Brinca et al. (2016) provided key insights into the impact of wealth inequality on fiscal multipliers, using a VAR approach to show a positive correlation between the wealth Gini coefficient and multiplier size. Wealth inequality accounted for about 20% of variability in multiplier size, explained by three channels: fewer liquidity-constrained households lower marginal consumption, reduced precautionary savings among less-constrained households, and lower real interest rates reducing the fiscal stimulus's value. Later, Brinca et al. (2021) examined Eurozone fiscal consolidation, finding that higher income inequality intensified the recessionary effects of austerity measures.

In contrast, Auerbach et al. (2021) proposed that higher income inequality reduces fiscal multipliers, as poorer

households' constrained demand and wealthier households' low spending propensities dampen the multiplier effect. They referenced Miranda-Pinto et al. (2023), who linked inequality to fiscal stimulus's impact on credit markets. Their findings suggested high inequality might ease credit conditions, potentially leading to larger multipliers, though empirical evidence was mixed.

The broader link between inequality and fiscal policy has been explored by others. Heimberger (2020) found that fiscal austerity worsens income inequality, with disposable income Gini coefficients rising significantly after fiscal adjustments, particularly during crises and under spending cuts. Similarly, Furceri et al. (2022) showed that a 1% GDP cut in government spending increases income inequality by 1 percentage point.

While structural and cyclical determinants of fiscal multipliers are well-studied, the role of inequality remains underexplored. Wealth inequality's effects were directly analyzed by Brinca et al. (2016), and income inequality was indirectly assessed in fiscal consolidation contexts by Brinca et al. (2021), with further theoretical contributions from Auerbach et al. (2021).

Model and Data

To gauge the impact of government spending multipliers, we employed the analytical approach outlined by Blanchard and Perotti (2002). This methodology was further extended by Perotti (2004) and tailored for the examination of fiscal policy measures. Assume a basic model encompassing three variables: the natural logarithm of real government consumption (g_t), the natural logarithm of real GDP (y_t), and the natural logarithm of the price level (p_t). The vector of endogenous variables can be written as X_t and the vector of residuals in reduced form as U_t. The ensuing reduced VAR structure can be expressed as:

$$X_t = A(L)X_{t-1} + U_t \tag{1}$$

where $X_t = [g_t, y_t, p_t]'$ and $U_t = [u_t^g, u_t^y, u_t^p]'$, L is the lag operator, and $A(L)$ is the polynomial of the corresponding degree. The reduced form of residuals of the variable g_t, i.e. u_t^g, can be interpreted as a shock.

Based on the so-called AB model (Lütkepohl 2005), we wrote a system of equations in the matrix form represented by the following equation:

$$AU_t = BE_t \tag{2}$$

where U_t is the vector of the VAR residuals and $E_t = [e_t^g, e_t^y, e_t^p]'$ is a vector of structural shocks or innovations. We can define matrices A and B. The equation (2) is written in the form:

$$\begin{bmatrix} 1 & 0 & 0 \\ -\alpha_g^y & 1 & 0 \\ -\alpha_g^p & -\alpha_y^p & 1 \end{bmatrix} \begin{bmatrix} u_t^g \\ u_t^y \\ u_t^p \end{bmatrix} = \begin{bmatrix} \beta_g^g & 0 & 0 \\ 0 & \beta_y^y & 0 \\ 0 & 0 & \beta_p^p \end{bmatrix} \begin{bmatrix} e_t^g \\ e_t^y \\ e_t^p \end{bmatrix}. \tag{3}$$

To achieve the identification of the system, we necessitate a total of $\left(2k^2 - \frac{1}{2}k[k+1]\right)$ restrictions where k stands for the number of endogenous variables which is 3 within our context.

The ordering of the variables delineates the causal interrelations among them. Concomitantly, alterations in government spending prompt immediate reactions in both real GDP and the price level. Simultaneously, government spending exhibits no concurrent response to changes in output and price level within the identical timeframe. Moreover, the price level exerts no contemporaneous influence on output. This system attains precise identification due to its adherence to a fitting set of constraints (12 restrictions). Based on the results derived from the VAR model, the impulse response function evaluates the dynamic patterns and magnitudes of individual component reactions to government spending shocks.

To scrutinize the associations between the magnitude of government spending multipliers and distinct country attributes, the following specification was applied:

$$FM_i = \beta_0 + \beta_1 X_i + e_i \tag{4}$$

where FM_i is the government spending multiplier of a country i, β_0 is a constant term, β_1 is slope regression coefficient, X_i is a country-specific characteristic of a country i, and e_i represents residuals.

The VAR model in our study comprises real government spending, real GDP, and GDP deflator. All variables have quarterly frequency and cover the period between 1995 and 2021 for 47 countries. Data for government consumption, GDP, and price levels are collected from the International Financial Statistics database (IMF, 2023). Additional variables are collected to examine the role of countries' characteristics. Thus, we employed the income Gini index as a measure of income inequality (World Bank, 2023) and top 10%, top 20%, lower 10%, and lower 20% income shares as income distribution measures (World Bank, 2023). Regarding wealth

inequality, the data set from Credit Suisse Bank (2023) was utilized. The average value of a specific indicator is determined based on available data. In the case of the wealth Gini, the median value is also included.

Estimation Results

The estimates of fiscal multipliers (Table 1) reveal that first, fiscal multipliers are predominantly positive across the forecast horizon for 31 countries, predominantly negative for 9 countries, and partially positive for 7 countries. Second, in the case of 25 countries, the value of multipliers is greater than one for at least part of the forecasting horizon. Third, in the case of 24 countries, the multiplier estimates are statistically significant. Furthermore, our analysis suggests the inflationary side effects of applying fiscal stimulus. Specifically, the estimates show (Table 2) that, in the case of 32 out of 47 countries, increased government spending causes inflationary pressures. In additional 13 countries, the price level response is at least partially positive. Only in two countries do the price dynamics indicate downward pressures. The price response is statistically significant in 83% of the countries of our sample.

Table 1

Government spending multipliers by countries

Notes: The solid line represents the output effect of a positive shock in government spending, with a magnitude of 1% of GDP. The dashed lines represent the upper and lower limits of the 90% confidence band.

Continuation of Table 1

Government spending multipliers by countries

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Continuation of Table 1

Government spending multipliers by countries

Notes: The solid line represents the output effect of a positive shock in government spending, with a magnitude of 1% of GDP. The dashed lines represent the upper and lower limits of the 90% confidence band.

Table 2

Response of price level to a positive shock in government spending

Notes: The solid line represents the response of price level to a positive shock in government spending, with a magnitude of 1% of GDP. The dashed lines represent the upper and lower limits of the 90% confidence band.

Continuation of Table 2

Response of price level to a positive shock in government spending

Notes: The solid line represents the response of price level to a positive shock in government spending, with a magnitude of 1% of GDP. The dashed lines represent the upper and lower limits of the 90% confidence band.

Continuation of Table 2

Response of price level to a positive shock in government spending

Notes: The solid line represents the response of price level to a positive shock in government spending, with a magnitude of 1% of GDP. The dashed lines represent the upper and lower limits of the 90% confidence band.

The estimates given in Table 3 suggest that higher income and wealth inequality tend to increase the size of the government spending multiplier, as indicated by the positive coefficients for income and wealth Gini measures and the shares held by the top income groups. Conversely, the shares held by the low-income groups tend to decrease the size of the multiplier, as indicated by the negative coefficients. The coefficient for income Gini is positive and statistically significant in all eight cases at a 10% significance level and in seven cases at a 5% significance level, suggesting that countries with greater income inequality tend to have larger government spending multipliers. In three cases, income inequality helps to explain nearly 20% of the variability of fiscal multipliers. The coefficients for the share of the top 10%- and 20%-income groups are also positive in all cases. Conversely, the coefficients for the share of lower 10%- and 20%-income groups are negative in all cases showing that countries where low-income households hold larger fraction of income tend to have smaller government spending multipliers. Coefficients for income concentration indicators are statistically significant in 88% of cases at a 10% significance level and in 72% of cases at a 5% significance level and help to

explain a considerable portion of the variability of fiscal multipliers. This is especially evident by the impact multiplier and average impact and first quarter multiplier where R-squared values hover between 15% and 20%.

The coefficients for wealth Gini are positive in all cases but just marginally statistically significant in some cases, suggesting that the distribution of wealth may have a weaker effect on the size of government spending multipliers. Nevertheless, the results indicate that countries with a less equal distribution of wealth tend to exhibit larger government spending multipliers, as also observed in Brinca et al. (2016). Overall, our findings suggest that income inequality and income concentration have a significant impact on the size of government spending multipliers while wealth inequality may have a more limited impact.

Based on the results, we can infer that fiscal policy tends to be more potent in more unequal societies. This implies that fiscal stimulus can more rapidly and effectively boost economic growth during recessions. Conversely, fiscal contraction in these countries during periods of fiscal crises may exacerbate and prolong recessions. Moreover,

fiscal policy could potentially contribute to reducing economic inequality. In highly stratified societies, fiscal stimulus exhibits a greater multiplier effect, meaning that appropriately tailored and more targeted increases in public spending could enhance the incomes of relatively poorer segments of the population.

Table 3

Determinants of the size of government spending multiplier

	$FM_i = \beta_{0,i} + \beta_{1,i}X_i + e_i$							
	Impact multiplier		Average impact and first quarter multiplier		Average one-year multiplier		Average two-year multiplier	
X_i	β_1	R^2	β_1	R^2	β_1	R^2	β_1	R^2
Income Gini	0.043*** (0.003)	0.176	0.055*** (0.001)	0.216	0.063*** (0.006)	0.156	0.064** (0.036)	0.094
Share of top 10% IG	0.060*** (0.003)	0.187	0.076*** (0.001)	0.232	0.089*** (0.004)	0.177	0.093** (0.024)	0.113
Share of top 20% IG	0.053*** (0.004)	0.178	0.068*** (0.001)	0.222	0.079*** (0.006)	0.166	0.081** (0.032)	0.103
Share of low 10% IG	-0.346** (0.013)	0.134	-0.428*** (0.007)	0.156	-0.444** (0.041)	0.093	-0.390 (0.175)	0.042
Share of low 20% IG	-0.166** (0.010)	0.144	-0.208*** (0.005)	0.173	-0.226** (0.024)	0.113	-0.212 (0.111)	0.058
Wealth Gini (median)	0.025 (0.101)	0.060	0.026 (0.145)	0.048	0.042* (0.073)	0.071	0.055* (0.075)	0.070
Wealth Gini (average)	0.026* (0.089)	0.064	0.027 (0.131)	0.051	0.040* (0.097)	0.061	0.050 (0.113)	0.056
	$FM_i = \beta_{0,i} + \beta_{1,i}X_i + e_i$							
	First quarter multiplier		Second quarter multiplier		Third quarter multiplier		Fourth quarter multiplier	
X_i	β_1	R^2	β_1	R^2	β_1	R^2	β_1	R^2
Income Gini	0.067*** (0.002)	0.189	0.066** (0.012)	0.133	0.073** (0.018)	0.117	0.066* (0.069)	0.071
Share of top 10% IG	0.093*** (0.002)	0.204	0.095*** (0.008)	0.155	0.104** (0.013)	0.134	0.095* (0.054)	0.084
Share of top 20% IG	0.082*** (0.002)	0.194	0.083** (0.010)	0.143	0.091** (0.017)	0.125	0.083* (0.064)	0.077
Share of low 10% IG	-0.509** (0.014)	0.131	-0.455* (0.067)	0.076	-0.497* (0.089)	0.066	-0.412 (0.228)	0.034
Share of low 20% IG	-0.250*** (0.009)	0.148	-0.232** (0.043)	0.092	-0.258* (0.056)	0.083	-0.222 (0.159)	0.046
Wealth Gini (median)	0.026 (0.254)	0.029	0.046* (0.085)	0.067	0.052 (0.101)	0.060	0.062* (0.091)	0.064
Wealth Gini (average)	0.028 (0.237)	0.032	0.045 (0.105)	0.059	0.047 (0.150)	0.046	0.055 (0.113)	0.048

Notes: FM_i represents selected government spending multiplier of a country i, X_i represents the determinant of the size of the government spending multiplier in the country i. Based on regression analysis, slope coefficients with corresponding R^2 are listed; p-values are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Concluding Remarks

Simultaneously with the evolving economic conditions of the past decade, the empirical literature has been gradually developing a common framework on the topic of fiscal multipliers although certain aspects still lack consensus. This article contributes new and compelling empirical evidence to this discussion by linking higher fiscal multipliers with more unequal economies in the context of income and wealth distribution. Specifically, our findings can be comprised as follows. First, estimated values of fiscal multipliers are mainly positive in 66% of the countries, mainly negative in 19% of the countries, and partially positive in 15% of the cases, with over half of the countries experiencing a fiscal multiplier value exceeding unity on at least part of the forecasting horizon.

Second, the response of the price level to a positive shock in government spending is primarily inflationary. Third, our empirical evidence demonstrates that a higher level of economic inequality, especially income inequality, leads to higher values of fiscal multipliers. According to the results, fiscal policymakers should give particular attention to the parameters related to income and wealth inequality when applying various budgetary measures. Future research should be devoted to the investigation of the nature of the interest rate response to fiscal shocks in the context of income and wealth inequality, building upon the work of Miranda-Pinto et al. (2023)

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Ekonomska neenakost in velikost multiplikatorja državnih izdatkov: empirična analiza

Izvleček

Empirična literatura heterogenost ocen fiskalnih multiplikatorjev pojasnjuje z analizo različnih cikličnih in strukturnih determinant gospodarstev, pri čemer je ekonomska neenakost kot ena izmed pomembnih strukturnih karakteristik v literaturi doslej prejela razmeroma malo pozornosti. V tej študiji smo na širokem vzorcu držav z uporabo metodologije vektorske avtoregresije najprej ocenili fiskalne multiplikatorje in vpliv fiskalnih spodbud na dinamiko splošne ravni cen. Ugotovitve kažejo, da so ocenjene vrednosti fiskalnih multiplikatorjev pretežno pozitivne, prav tako pa aplikacija fiskalnih spodbud povzroča inflacijski učinek. Nato smo preučili variabilnost velikosti fiskalnih multiplikatorjev v povezavi z različnimi indikatorji dohodkovne in premoženjske neenakosti. Ključni izsledki te študije razkrivajo, da se z naraščanjem ekonomske neenakosti, zlasti v kontekstu dohodkovnih razlik, povečuje tudi velikost fiskalnih multiplikatorjev. Ta ugotovitev je pomembna zlasti za nosilce ekonomske politike pri oblikovanju ustreznih fiskalnih ukrepov v spreminjajočem se makroekonomskem okolju.

Ključne besede: fiskalni multiplikator, dohodkovna neenakost, premoženjska neenakost, VAR

Pull Factors and Capital Inflows: Empirical Insights from Transformative Dynamics in Southeast Europe

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Abstract

This study seeks to examine pull factors of capital inflows, offering an empirical analysis based on a panel study of eleven Southeast European countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Montenegro, North Macedonia, Kosovo, Romania, Serbia, and Türkiye) over the period of 2004 – 2021. Methodologically, the study utilizes a fixed effects (FE) regression model with robust Driscoll-Kraay standard errors to address issues of heteroskedasticity, autocorrelation, and potential cross-country correlation. The study finds that several pull factors can be relevant in driving capital inflows as follows: market size, inflation, financial and trade openness. The empirical analysis confirms that the forces of trade liberalization, financial liberalization, market size, real interest rates and inflation stability are the elements that encourage capital inflows. On the other hand, the estimated effects of current account balance and real economic growth are not very convincing. Finally, we stress that more study is required to fully understand the pull variables' ultimate macroeconomic implications at the national level. The overall influence of these positive (or negative) inflows may be moderated by several characteristics, even if certain countries may be extremely susceptible to these factors.

Introduction

Globalization and cross-border flows to developing nations have increased literature on capital flows and liberalization effects. Foreign capital inflows can stimulate economic advancement and prosperity, but they also present opportunities and uncertainties in macroeconomic policies (Obstfeld, 2012). Domestic drivers of capital inflows or demand-side factors in emerging markets include domestic macroeconomic fundamentals and potential foreign capital fleeing for better investment prospects (Ganić, 2021).

Scientific research on international capital movements indicates differences between developed, developing, and emerging economies,

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while some studies argue for global patterns. Although there is no consensus, research generally shows that factors attracting domestic capital influence investor risks and returns based on economic fundamentals, policies, and market imperfections (Fernandez-Arias & Montiel, 1996; Ghosh et al., 2014). The 1980s and 1990s saw emerging markets relax capital controls, contributing to increased cross-border capital flows (Kose & Prasad, 2004). The reasons for this can be attributed to certain economic determinants such as high interest rates, low inflation, potential for rapid growth, and trade openness. Push factors arise from external economies, while pull factors originate from within the domestic economy (Sarno, et al. 2016).

This paper investigates the influence of domestic factors on capital flows in eleven Southeast European countries. It aims to identify these factors' presence and examine their potential impact on capital inflows. The study will also explore theoretical and statistical methods for data interpretation. No country-specific study in Southeast European countries has investigated this perspective, revealing a gap in the literature on the impact of various domestic pull factors on capital flows. While cross-country research in Southeast Europe has addressed capital inflows, economic liberalization, and institutional outcomes, there is extensive research on the factors influencing cross-border flows in emerging markets (EMEs). However, it remains unclear which variables significantly impact these markets. Therefore, to determine the drivers of cross-border capital flows, we analyze pull factors through the lens of international financial theory.

Literature Review

Economic cooperation leads to significant financial flows to emerging and developing nations, benefiting their economies. However, unpredictable portfolio investments may have negative impacts. Research focuses on understanding the factors influencing these flows, including both push and pull elements. Limited studies have explored capital outflows from industrialized to developing countries. The global macroeconomic shifts during the 2000s prompted ongoing debates on the relative importance of push and pull factors, although within a different context. With the availability of more detailed data, researchers began focusing on the determinants of various capital flow components. The global financial crisis also led to significant changes in the patterns of capital movements. The debate continues on whether capital movements are driven by developed world business cycles or developing nations' economic improvements (Mudyazvivi, 2016; Oloko, 2018; Taylor & Sarno, 1997; Fratzscher, 2012; Calvo, et al. 1993).

According to Calvo & Reinhart (1996), regional geography and other country-specific factors—which may not always be under the country's control—can have a significant impact on capital inflows. The authors show that small countries that are in the same region as large countries that draw capital flows see an increase in capital flows. Numerous factors that impact FDI flows have been examined in studies that have looked at them. Some scholars explain that the industrialized world's variables can influence the total amount of capital flows, but each nation's unique circumstances ultimately determine which nation will receive the capital (Montague & Reinhart; 1999; Corbo & Hernandez, 2001). Montiel & Reinhart's study (1999) suggests that capital constraints can boost FDI, while cross-border capital flows improve economic well-being by facilitating efficient capital allocation and harmonizing consumption paths (Koepke, 2019).

Early research emphasized the impact of domestic factors on the rapid capital inflow in emerging markets in the 1990s (Lopez Mejia, 1999). Investors are attracted to these markets for risk diversification and higher returns, driven by improvements in creditworthiness and productivity due to reforms. In this context, some studies indicate that production levels, low inflation, market openness, management and depth of the financial system play a significant role in attracting capital. Likewise, GDP growth is seen as a significant determinant in attracting capital flows (Giordani et al., 2017; Mercado & Park, 2011).

Some empirical studies indicate that several factors are crucial in determining capital flows, including real exchange rates, inflation rates, the degree of financial development, economic openness, the quality of domestic institutions, the amount of public debt, and many other relevant variables (Alfaro et al., 2007; Milesi-Ferretti & Tille, 2011; Olaberriá, 2015; Cerutti, 2015; Baek & Song, 2016; Ganić 2022). For example, Alfaro et al. (2007) concluded that luring cross-border capital inflows to emerging economies requires a strong economic foundation in the host nation.

Eichengreen et al.'s study (2018) reveals that capital and debt are the most volatile assets, influenced by pressure factors in bank-mediated flows, while foreign direct investment is more stable. Several studies investigated explored capital flows in Eastern Europe (Lankes et al.,

1999; Murgasova et al., 2015; Ganić, 2021). Generally, the studies find a rise in capital flows thanks to progress in the transition process and macroeconomic stability, which serve as significant pull factors.

The Balkans struggle to control foreign capital flows, leading to slow economic growth and declining government aid. Small economies and low activity make external funding primarily bank loans and debt finance (Ganić, 2021).

As noted by Cerutti (2015), the unique features of the market have a substantial impact on the push and pull forces that affect capital flows. Many pull factors are examined in their analysis, including trade openness, public debt, commodity prices, real GDP growth, and other pertinent variables. Murgasova et al. (2015), on the other hand, examine the Western Balkan economies and identify several changes. Their research leads them to the conclusion that the Western Balkan nations are steadily reconstructing and reorganizing their economies, adjusting to international trade, growing the private sector, and enhancing legal frameworks, tax structures, and financial organizations.

Koczan (2017) investigated the flows of international capital between the Western Balkans and newly admitted EU countries, concluding that the financial integration of the Western Balkans began somewhat later than that of the new EU members. However, it is still growing rapidly despite the region's relatively low level of capital account openness. Additionally, Barrot & Serven (2018) concluded that the exchange rate regime and the level of financial openness are important determinants of capital flows.

Ganić & Hrnjic (2019) empirically investigated FDI flows in the countries of South-Eastern and Central-Eastern Europe and concluded that they can be attracted by stimulating economic growth, maintaining political stability, striving for EU membership and reducing business regulations. In conclusion, an analysis of multiple studies demonstrates a relationship between pull factors and capital inflows. Economies with stronger pull factors tend to attract more foreign investors and experience greater capital inflows. However, recent research suggests that the impact of pull variables differs among countries and that their effects on capital inflows are not uniform globally.

Methodology and Data

The research utilizes an unbalanced panel dataset that includes eleven countries from Southeastern Europe. These countries are Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Montenegro, North Macedonia, Kosovo, Romania, Serbia and Türkiye between 2004 and 2021. Multiple sources, including the World Development Indicators (WDI) database (2021), The Chinn-Ito Financial Openness Index (2021 Update), External Wealth of Nations Mark II database (Lane & Milesi-Ferretti, 2021) have been utilized to gather the data for this study. For the variable of REIR missing data for Greece (2015, 2017, 2018, 2019, 2020, 2021), Türkiye (2020, 2021), Kosovo (2004, 2005, 2006, 2007, 2018, 2019, 2020, 2021) while for the variable CAOPEN missing data for Serbia, Montenegro and Kosovo. Additionally, it is essential to provide additional context by presenting each variable alongside its anticipated effect within the research framework. Moreover, Table 1 presents definitions of all variables, their abbreviations and data sources.

This study examines capital inflows (CAPI) as the primary dependent variable, influenced by factors like inflation, market size, real interest rate, trade openness, capital account balance, financial openness, and economic growth. Capital inflows include FDI, portfolio investment, debt, financial derivatives, and foreign exchange reserves (Lane & Milesi-Ferretti, 2021).

To determine how much a nation is more likely to trade with other nations, the trade openness variable (TRO) is incorporated into the model. This variable was selected because it was frequently used in studies that stressed its significance and impact on capital inflows, including those by Biesebroeck (2003), Mercado & Park (2011), Cerutti (2015), Ganić & Hrnjic (2019), and Ganić & Novalić (2023). It is anticipated that there will be a positive relationship between this variable and our dependent variable (CAPI), showing that increased trade openness is typically accompanied by increased capital inflows.

To proxy a host country's financial openness a variable of CAOPEN is employed in the model because it may be crucial for capital inflows into emerging markets (Alfaro, et al. 2007; Mercado & Park, 2011; Byrne & Fiess, 2016; Barrot & Serven, 2018). If a nation's capital account is

closed, its requirement for external financing might not even be satisfied. We use a measure of (de jure) financial openness—derived from Chinn -Ito Financial Openness Index (updated 2021) ()—into our analysis to account for this potential and expect a positive relationship between financial openness and capital inflows.

The model incorporates the real interest rate (REIR) as a domestic pull factor, highlighting official policies, market imperfections, and macroeconomic conditions. Higher interest rates and a strengthening domestic currency are expected to attract more capital to emerging markets. (Fernandez-Arias & Montiel, 1996; Ghosh, et al. 2014).

The current account model reveals that capital flows in developing countries respond to temporary shocks, with surges linked to short-lived capital inflows. The current account deficit (CACC) should address financing needs arising from these shocks (Obstfeld & Rogoff, 1995; Ghosh, 1995).

Table 1

Variables definitions, labels and data sources

Variable	Definition	Label	Source
Total Capital inflows	The sum of foreign direct investment, portfolio investment, and debt.	CAPI	Lane and Milesi-Ferretti, 2021
Trade openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.	TRO	World Development indicators (2021)
Capital openness	Measures the extent of openness in capital account transactions	CAOPEN	The Chinn-Ito Financial Openness Index (2021 Update)
Real interest rate (%)	The real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator.	REIR	World Development indicators (2021)
Current account balance	The current account balance is the sum of net exports of goods and services, net primary income and net secondary income.	CACC	World Development indicators (2021)
Inflation	A sustained increase in the general level of prices for goods and services.	INFL	World Development indicators (2021)
Market size	The sum of gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output, divided by mid-year population.	LnGDPPC	World Development indicators (2021)
Economic growth	Annual percentage growth rate of GDP at market prices.	GDPGrowth	World Development indicators (2021)

Source: Authors

Additionally, the control variable inflation (INFL) is incorporated into the model to serve as a stand-in for the macroeconomic environment of the host country. The variable INFL was chosen due to its widespread use in the studies reviewed in this paper. Notably, research by Haque (1997), Mercado & Park (2011), Kim et al. (2013), and Cerutti (2015) have shown that lower inflation levels can attract more capital inflows and stimulate investor interest in a country.

GDP per capita (GDPPC) is used as an indicator of the market size in many studies, including works by Ganić & Hrnjic (2019), Mercado & Park (2011), Kim et al. (2013),

Mudyazvivi (2016), and Belke & Volz (2018). These works have shown that a larger market usually attracts more interest from investors, leading to increased capital inflows in the country. Therefore, it is expected that there will be a positive relationship between market size and capital inflows.

An economic growth variable (GDPGrowth) is included in the model as a control variable to control different growth rates across the sample. Ghosh et al. (2014), Cerutti (2015), Ganić & Hrnjic (2019) suggest that the probability of seeing capital inflows is also correlated with the country's fundamentals, particularly actual

economic growth. Therefore, variable economic growth is included in the model with the expectation to have a positive impact on capital inflows.

The study attempts to gain a thorough grasp of each pull factor's impact on capital inflows by methodically examining its consequences. To estimate and measure the impact of pull factors on capital inflows we apply the following general panel data regression model:

$$LnCAPI_{it} = \alpha + \beta Pull\ factors_{it} + \gamma Control\ variables_{it} + \varepsilon_{it} \tag{1}$$

where i refers to individual country (i = 1,2 … …, N) at time period t (t = 1,2 … …, T), while ε_{it} is error term.

Our particular linear equation model is expressed as follows:

$$LnCAPI_{it} = \beta_o + \beta_1\ LnTRO_{it} + \beta_2 CAOPEN_{it} + \beta_3 REIR_{it} + \beta_4\ LnCACC_{it} + \beta_5 INF_{it} + \beta_6\ LnGDPPC_{it} + \beta_7\ GDPGrowth_{it} + \varepsilon_{it} \tag{2}$$

where the pull factors are trade openness (TRO), capital openesses (CAOPEN), the real interest rate (REIR) and the current account balance (CACC) while the control variables are market size (GDPPC), economic growth variable (GDPGrowth) and inflation (INFL).

The study used pooled data model (OLS), fixed effects model (FE), and random effects (RE) model to estimate the model stated in equation 2. Post-estimation tests revealed that FE model regression with Driscoll and Kraay standard errors was the most reliable approach. These standard errors were appropriate for errors with heteroskedasticity, autocorrelation, and possible correlation across countries.

Results and Discussion

Table 2 provides descriptive statistics for the dataset used in the models, highlighting key variables. The mean value of LnCAPI is 4.21, with a relatively low standard deviation of 0.79, indicating a significant spread of values, ranging from 3.10 in Montenegro (2004) to 5.98 in Greece (2009). LnTRO ranges from 1.77 in Romania (2005) to 2.17 in North Macedonia (2021), with a relatively low standard deviation of 0.11 indicating similar trade openness across most SEE countries. The variable of CAOPEN has a mean of 0.62 and a standard deviation of 0.28, suggesting moderate financial openness with values ranging from 0.16 (Türkiye) to 1 (Bulgaria, Romania, and Greece). The variable of REIR has a high standard deviation of 4.34 and an average of 4.82, with values ranging from -9.74 in Serbia (2005) to 17.73 in Kosovo (2008). The variable of CACC varies significantly, with values between -49.65 in Montenegro (2006) and 3.73 in Croatia (2017), and the inflation rate ranges from -2.41 in Kosovo (2010) to 19.60 in Kosovo (2004), showing significant variability. The data set presents a detailed overview of economic metrics, highlighting differences in variability among the variables.

Table 2
Descriptive statistics

Variables	Obs	Mean	Std. Dev	Min	Max
LnCAPI	198	4.478567	0.7929331	3.068557	5.978065
LnTRO	196	1.921911	0.1141669	1.6641	2.166493
CAOPEN	145	0.625207	0.2920249	0.1629476	1
REIR	182	6.125173	6.155143	-9.739032	43
CACC	195	-6.960853	6.8841	49.64724	3.734552
INFL	196	3.587257	3.944117	-2.410264	19.59649
LnGDPPC	194	8.819102	0.5371324	7.832986	10.08884
GDPGrowth	195	2.960803	4.230841	-15.30689	13.04346

Source: Authors' calculation

A scatterplot matrix is a useful tool for showing a group of scatterplots that show multiple variables' pairwise correlations. It shows that there are several important links between the variables (Figure 1). Important findings include the following: there are positive connections between LnCAPI and GDPPC, REIR and CAOPEN, and negative correlations between LnTRO and GDPGrowth with LnCAPI. These correlations demonstrate the interdependence of several economic variables, with real interest rates, GDP per capita, trade and capital account openness all having a significant impact on total capital inflows.

Figure 1
The scatterplot matrix between selected variables
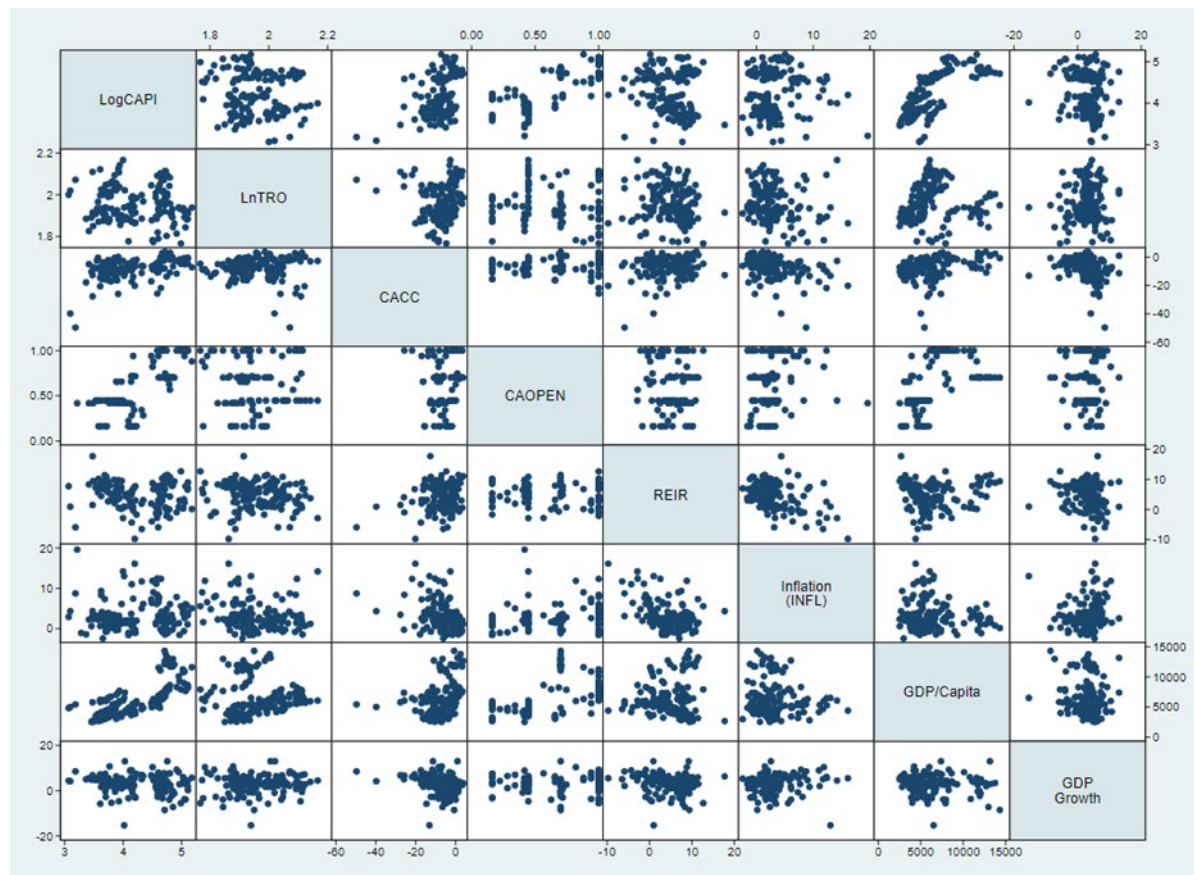
Source: Authors' calculation

The F-test, Breusch-Pagan test, and Hausman test are used to identify the most suitable model for our data (Table 3). The F-test for comparing pooled and fixed effects (FE) model yields a p-value of zero, leading to the rejection of the null hypothesis and indicating that the pooled model is not preferable. Since the null hypothesis of the LM test is rejected, we determine that the random effects (RE) model is more desirable than the pooled model. The Hausman test compares FE and RE estimators, and the results (i.e., chi-square statistic: 626.20, df = 7, p=0.0000) suggest that the FE model is preferable to the RE model. Therefore, we conclude that the FE model is preferred.

Given that the panel data used in the regression allows for multiple observations to be made at different periods for each country or unit, the total number of observations for all groups is 134. This suggests that the number of data points or records in each set under examination may range from 134, depending on the type of panel data. These records may include repeated observations of the eight variables that make up the panel data model.

Table 3
Model Selection

Models compared	Test applied	Test statistic	p-value
Pooled vs Fixed	F test	F (7, 119) = 14.01	p=0.0000
Pooled vs Random	Breusch and Pagan Lagrangian multiplier test	Chibar3(05) = 41.49	p =0.0000
Random vs Fixed	Hausman Test	chi2(7) = 626.20	p=0.0000

Source: *Authors' calculation*

Table 4 presents empirical results for three models, the random effects model (M1), the fixed effects model (M2) and the fixed effects model with Driscoll and Kraay standard errors (M3). The estimated coefficient for Trade Openness (LnTRO) is statistically significant at a 10% and 5% level in both fixed effects models (M2 and M3), respectively. This implies that changes in trade openness have a significant impact on LnCAPI, indicating its role as

a pull factor influencing capital inflows. It is in line with some studies done by such as: Mercado & Park, (2011), Cerutti (2015), Biesebroeck (2003) that high trade openness fosters capital inflows.

The estimated value of the coefficient for the second variable CAOPEN, shows a significant positive relationship with capital inflows in all three models at a 1% and 5% level. It is in line with our expectations where

higher financial openness stimulates capital inflows (Alfaro, et al. 2007; Mercado & Park, 2011; Byrne & Fiess, 2016). In addition, there is an inverse relationship between our third explanatory variable real interest rate and capital inflows in Model 2 and Model 3. The significant negative relationship in Model 3 at the 10% level indicates that the current level of real interest rate in a panel of eleven Southeast European countries does not look to stimulate more capital inflows in the region.

Table 4

Regression output

Explanatory Variables	RE	FE	FE
	Ordinary se(b$_j$)	Ordinary se(b$_j$)	Driscoll-Kraay se(b$_j$)
	M1	M2	M3
LnTRO	-1.460194***	0.7395601*	0.8127591*
	(.3741787)	(0.5643877)	(0.2342594)
CAOPEN	0.55345***	0.4384475***	0.4283296**
	(0.1409575)	(0.1618336)	(0.2225157)
REIR	0.0221728***	-0.0054981	-0.0054981*
	(0.0069769)	(0.0068247)	(0.0029272)
CACC	0.0071931	-0.0045073	-0.0039611
	(0.0073414)	(0.0062704)	(0.004507)
INFL	0.0342206***	-0.0118459	-0.0122803***
	(0.010757)	(0.0101987)	(0.0022509)
LnGDPPC	0.7736761***	0.1387171	0.0000128*
	(9.38e-06)	(0.0000201)	(6.37e-06)
GDPGrowth	-0.0028925	-0.0223547***	-0.0231566***
	(-0.0087669)	(0.0067165)	(0.0040633
Constant	-0.0293005	1.823589***	|2.826066***
	(1.263711)	(1.069752)	(0.4409315)
Observations	134	134	134
sigma_u	0	0.77400823	
sigma_e	0.2657688	0.2657688	
rho	0	0.89453374	
R-sq within	0.0303	0.2005	0.2005
R-sq between	0.9500	0.0380	
R-sq overall	0.7988	0.0425	

Note: standard errors are reported in parentheses; while *, **, *** denote 10%, 5% and 1% significance levels respectively.
Source: *Authors' calculation*

Next, the coefficient for Gross Domestic Product per Capita (LnGDPPC) is also statistically significant in Model 3 at 10% significance level, suggesting that higher market size is associated with increased capital inflows. It is in line with some studies done by Mercado & Park (2011), Kim, et al. (2013), Mudyazvivi (2016), Belke & Volz (2018), Ganić & Hrnjic (2019) that suggest that market size determines capital inflows. Inflation (INLF), a significant factor in capital flows, has a negative coefficient in Model 3, indicating that higher levels of inflation rate decrease capital inflows and vice versa, aligning with previous studies suggesting lower inflation levels attract greater capital inflows and investor interest

(Haque, 1997; Mercado & Park, 2011; Kim, et al., 2013; Cerutti, 2015). Furthermore, the variable of current account (CACC) has a negative but insignificant impact on capital inflows, while a variable of GDPGrowth also has a negative and statistically significant impact on capital inflows in Model 2 and Model 3.

The Pesaran test is used to evaluate residual correlation (Table 5). Bias in the test results may be introduced by cross-sectional dependence. In the Pesaran test, the null hypothesis is rejected, indicating the presence of cross-sectional dependency. The Modified Wald test for group-wise heteroscedasticity in the FE regression models is

used to assess the model for heteroscedasticity. Here, homoscedasticity or constant variance is the null hypothesis. The p-value equal to zero indicates that heteroscedasticity is present, and the null hypothesis is rejected (Table 5). The Wooldridge test for autocorrelation in panel data is employed to check for autocorrelation in the model. Here, the null hypothesis states that there is no serial correlation. However, as shown in table 5 the null hypothesis must be rejected because the p-value of 0.0475 indicates the presence of autocorrelation.

Table 5
Diagnostic tests for the fixed effects model

Pesaran test	
Cross-sectional independence	2.648
p-value	0.0081
Modified Wald test	
chi2	2595.14
p-value	0.0000
Wooldridge test	
F(1,7)	5.757
p-value	0.0475

Source: *Authors' calculation*

We used the robust Driscoll-Kraay standard errors in Model 3 (Table 4) to address this problem since they are not affected by cross-sectional dependence. Following the Driscoll–Kraay regression, standard errors are modified and, for the most part, variable significance increases.

Conclusion

This research provides an empirical analysis based on a panel examination of eleven Southeast European nations to investigate the link between pull factors impacting capital inflows. Inflation, market size (as measured by GDP per capita), real interest rate, trade openness, capital account balance, financial openness, and economic growth are among the independent factors that were examined.

The analysis confirms that the forces of trade liberalization, financial liberalization, evolution of markets, real interest rates and inflation stability are the elements that encourage capital inflows. On the other hand, the effects of current account balance and real economic growth are not very convincing. It should therefore be understood that global conditions are likely to affect it in line with the economic structures of respective countries, the result of global market forces. In this vein, the current analysis finds the current account balance and capital flow nexus for the SEE region to be negative and statistically insignificant. Such channels are generally feeble or occasionally mediated and thus do not support the assertion that there is no or insignificant relationship between the CACC and capital flows in SEE countries. This is because capital inflows due to investment such as trade liberalization, financial liberalization and market development can still take place in this case even if a country's current account is falling into deficit. In fact, capital flows to the SEE region increase in response to increased trade and financial openness, and income growth, while the capital inflows decrease in response to increased inflation. Meanwhile, the negative GDP growth effect on the capital inflows could imply the rolling of economies, or unsustainable patterns associated with GDP growth in the SEE countries before and after the 2008 crisis. However, in this case, higher rates of economic growth intensified concerns of investors regarding the sustainability of which affected capital inflows.

The interest in investing in Southeastern European countries, which are keen to attract capital inflows within their transformative path to higher capital market development, is driven by their relatively low levels of capital equipment. Additionally, strategies such as trade and financial liberalization, inflation control, and market expansion play a crucial role in drawing investments to the region. Policymakers often strive to attract foreign direct investment by understanding the relationships between interest rates, economic growth, and capital inflows to develop effective economic policies. Therefore, future research should explore the relationship between capital inflows and economic growth by introducing new factors or employing different research methods to determine factors of higher direct investments among the countries in the region. Moreover, examining how governance standards and institutional factors influence capital inflows could offer valuable insights.

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Dejavniki pritegovanja tujega kapitala: Empirični vpogled v transformacijsko dinamiko Jugovzhodne Evrope

Izvleček

Ta študija skuša preučiti dejavnike pritegovanja tujega kapitala (ang. pull factors) z empirično analizo enajstih držav Jugovzhodne Evrope (Albanije, Bosne in Hercegovine, Bolgarije, Hrvaške, Grčije, Črne gore, Severne Makedonije, Kosova, Romunije, Srbije in Turčije) v obdobju 2004–2021. Metodološko študija uporablja regresijski model s fiksnimi učinki (FE) z robustnimi Driscoll-Kraay standardnimi napakami, da bi naslovila težave heteroskedastičnosti, avtokorelacije in morebitne korelacije med državami. V študiji je bilo ugotovljeno, da je več dejavnikov pritegovanja tujega kapitala pomembnih za spodbujanje priliva kapitala, in sicer velikost trga, inflacija ter finančna in trgovinska odprtost. Empirična analiza potrjuje, da so sile trgovinske liberalizacije, finančne liberalizacije, velikosti trga, realne obrestne mere in stabilnost inflacije elementi, ki spodbujajo prilive kapitala. Po drugi strani pa ocenjeni učinki stanja tekočega računa in realne gospodarske rasti na prilive kapitala niso zelo prepričljivi. Poudarjamo, da je potrebnih več raziskav, da bi v celoti razumeli končne makroekonomske posledice dejavnikov pritegovanja tujih investicij na nacionalni ravni. Skupni vpliv teh pozitivnih (ali negativnih) prilivov bi lahko bil moderiran z različnimi značilnostmi, tudi če so lahko nekatere države izredno občutljive na te dejavnike.

Ključne besede: Kapitalski prilivi, dejavniki pritegovanja tujega kapitala, jugovzhodna Evropa, panelna analiza podatkov, Driscoll-Kraay standardne napake

Work-Related Factors Influencing Presenteeism in Croatia during COVID-19: A Logistic Regression Approach

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Abstract

This article analyses the work-related factors that impact the occurrence of presenteeism in Croatia during the COVID-19 pandemic. The main objective is to examine the connection between key variables and the prevalence of presenteeism among employees in Croatia. The study used logistic regression analysis to examine data from the 2021 European Working Condition Telephone Survey (EWCTS), encompassing a sample of 491 employees from Croatia. The study investigated work-related factors such as job demands, working hours, supervisory responsibilities, telework, and cooperation with coworkers. The analysis also takes into account demographic control variables, including age, gender, and educational level. The findings suggest that there is a significant relationship between work stressors and presenteeism. Employees who lack good collaboration with colleagues are more prone to attending work even when they are unwell. Age was also determined to be a significant factor. The study indicates that work-related factors have an impact on presenteeism in Croatia. To mitigate the adverse effects of presenteeism, firms should adopt strategies to enhance working conditions and foster a conducive work atmosphere. The results offer valuable perspectives for future research and practical strategies to reduce presenteeism and improve employee wellbeing.

Introduction

The COVID-19 pandemic profoundly affected work and society. Several restrictions were characteristic, especially for phases with high infection rates. The pandemic has led to far-reaching changes in the everyday working lives of employees. Comprehensive measures were also taken in Croatia, which had a major impact on social and economic life. These measures included school and workplace closures as well as various stay-at-home regulations.

The pandemic has also had an impact on the mental health of the Croatian population. A study from 2020 showed that women and younger people in particular exhibited symptoms such as depression or stress (Margetić et al., 2021, p. 4). Presenteeism, the phenomenon of working despite illness, can be influenced by a variety of different factors. The COVID-19 pandemic plays a special role here due to the various measures and the resulting changes in working conditions. The resulting uncertainties can lead employees to work despite illness (Kinman & Grant, 2021, p. 1). Even before the COVID-19 pandemic, a study by Miraglia and Johns (2016) showed that of all possible influencing factors, work-related factors is the factor group that has a major influence on the occurrence of presenteeism (Miraglia & Johns, 2016, p. 33f).

For Croatia, there are only a few studies that deal with the topic of factors influencing presenteeism. Those studies that have dealt with the topic of presenteeism have largely focused on employees from the healthcare sector. For example Brborović et al. showed that nurses who came to work despite being ill had significantly higher stress levels compared to nurses who did not show presenteeism (Brborović et al., 2016, p. 5). A previous study looked at the possible consequences of presenteeism in healthcare and investigated whether presenteeism among nurses in Croatia has an impact on patient safety. The results of the study showed that presenteeism, therefore if nurses show up despite illness, had no impact on patient safety (Brborović et al., 2014, p. 151). A follow-up study, which also looked at the relationship between presenteeism among nurses in Croatia and patient safety, was able to prove that presenteeism is associated with a culture of high patient safety. This suggests that when patient safety is high, nurses are more likely to come to work sick (Brborović & Brborović, 2017, p. 187). Another study of workers in Croatia looked at the question of whether there is a difference between workers who perform manual tasks and workers who mainly perform sedentary tasks. Employees from shipyards, the postal service and the police were surveyed. Both groups showed high levels of presenteeism. No significant difference could be calculated between these groups (Lalić & Hromin, 2012).

The primary aim of this article is to investigate the influence of work-related factors on the occurrence of presenteeism in Croatia. This is especially against the background of the ongoing COVID-19 pandemic at the time. As mentioned above, there are only a few studies on this topic in Croatia. At the same time, it shows that presenteeism rates are higher in Croatia than in other European countries (Eurofund, 2024). Given the limited research on presenteeism in Croatia and the special circumstances of the COVID-19 pandemic, the study aims to identify the work-related factors that favour the occurrence of presenteeism among employees in Croatia. This research provides both empirical and practical contributions. This study addresses a research gap by examining the influence of work-related factors on presenteeism in Croatia, especially in the context of the COVID-19 pandemic. The study tries to offer essential recommendations for corporations and policymakers on how targeted workplace interventions might alleviate the adverse impacts of presenteeism. This study assists in both safeguarding employee health and improving workplace productivity.

Literature Review

Presenteeism

To date, there is no uniform definition for presenteeism in the existing literature to which researchers can refer. In general, presenteeism is described as behaviour as "behaviour of working in the state of ill-health" (Ruhle et al., 2020, p. 7). Presenteeism is understood as the opposite of absenteeism: Absenteeism describes the behaviour in which employees take sick leave in the event of an existing illness. Compared to presenteeism, the subject of research on absenteeism can look back on a longer research history (Gosselin et al., 2013, p. 75).

Presenteeism is researched differently in different research traditions. In the US research context, for example, the focus is often placed on the loss of productivity and an attempt is made to calculate the resulting loss in financial losses to reduce the resulting costs. This contrasts with the European research tradition, which attempts to understand the behaviour of employees in the decision-making process for presenteeism. The aim here is to identify the factors responsible and derive recommendations for action (Lohaus & Habermann, 2018, p. 14).

The relevance of this research topic is reflected in the consequences of presenteeism: First and foremost, presenteeism is shown to have an impact on the future health status of employees (Bergström et al., 2009, p. 633; Gustafsson & Marklund, 2011, p. 160; Skagen & Collins, 2016, p. 22). At the same time, other studies show that presenteeism can also have beneficial effects on employees, although the study situation on this issue is still less mature (Ruhle et al., 2020, p. 8). The group of

employees suffering from mental illnesses is particularly emphasized in this question. For example, participation in working life can have a "therapeutic" effect in the presence of a mental illness (Karanika-Murray & Biron, 2020; Patel et al., 2023, p. 840; Ruhle et al., 2020, p. 8).

Looking at the presenteeism values based on the data from the European Working Conditions Telephone Survey (EWCTS) from 2021, it can be seen that employees from Croatia have higher presenteeism rates than the average of all participating countries (Figure 1).

Several studies have attempted to identify the various influencing factors that promote the occurrence of presenteeism. Presenteeism is seen as a phenomenon that is influenced by a variety of factors (Caverley et al.,

2007, p. 315). Based on these studies, four groups can be identified that are emphasized in the investigations: Contextual factors, organizational factors, work-related factors and personal factors. Among other things, contextual factors refer to the welfare state orientation or the respective economic situation of a country under investigation. In the case of organizational factors, characteristics such as the size of the company, the structure of the employment contract or the perceived fairness in an organization are examined. The personal factors focus primarily on characteristics such as gender, age and level of education. Of all these factors, the group of work-related factors, in particular, is described as having the greatest influence on the occurrence of presenteeism (Miraglia & Johns, 2016 cited in Lohaus 2018, p. 110).

Figure 1

Presenteeism per country 2021
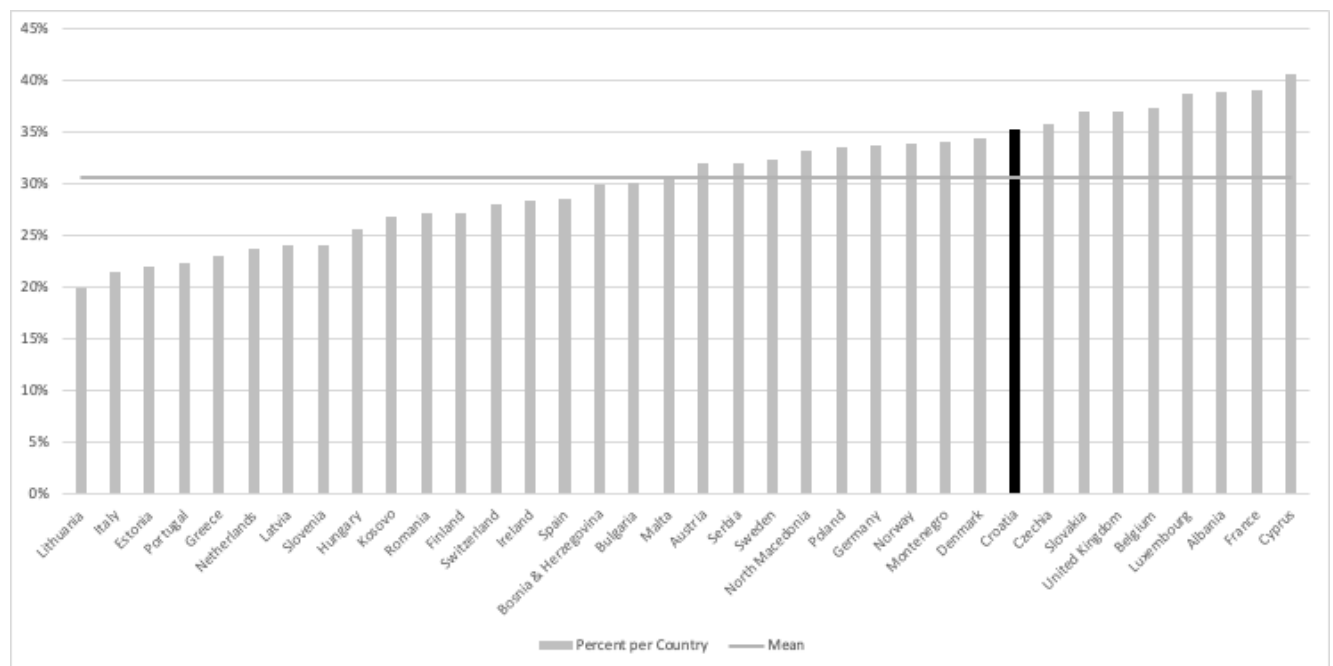
Source: Eurofund, 2024

Work-Related Factors

As already mentioned, work-related factors have the greatest explanatory power when it comes to influencing the occurrence of presenteeism.

Some studies have investigated the connection between specific working conditions and the occurrence of presenteeism. These include physical demands that involve physical exertion, such as lifting heavy loads or performing tasks in tiring positions. Job demands not only

refer to physical demands but also to social aspects that have an impact on the well-being of employees. Specific job demands do not have to be negative per se, but the specific working conditions can be perceived as a stress factor that can arise when performing the job requirements (Demerouti et al., 2009, p. 52). Here the authors refer to the work of Hobfoll who sees certain working conditions as a possible reason for the strain on resources. Confronted with this situation, people try to apply strategies that can be used to adapt to the specific situation (Hobfoll, 2001). Also in the meta-analysis by

Miraglia & Johns showed a connection between physical demands and presenteeism (Miraglia & Johns, 2016, p. 25).

The performance of a supervisory role is seen in the studies as a possible influencing factor in the occurrence of presenteeism. In their study of Danish employees, Hansen and Andersen were able to prove that holding a leadership role has a positive influence on the occurrence of presenteeism (Hansen & Andersen, 2008, p. 963). In this context, Johns shows that this circumstance can be caused by a specific understanding of the corporate culture, which is also expressed in long working hours, among other things (Johns, 2010, p. 528) as well as being under greater time pressure (Hansen & Andersen, 2008, p. 957).

Also Arnold & de Pinto found a correlation between holding a management role and presenteeism. Together with the group that worked more than 45 hours per week, there were fewer sick days and more days on which these employees worked sick. The authors describe this group as "career-oriented", which can be characterized by the fact that they have more autonomy over their working hours and at the same time have a greater area of responsibility (Arnold & de Pinto, 2015, p. 486).

In general, the organization of working hours is also seen in studies as a possible influencing factor on presenteeism. The issue of working hours and how employees perceive them is investigated in different ways. On the one hand, studies show that long working hours are associated with the occurrence of presenteeism. This is shown by studies from Denmark, Japan and Taiwan (Hansen & Andersen, 2008, p. 962; Ishimaru & Fujino, 2021, p. 4f; Lu & Cooper, 2022). Miraglia and Johns were also able to prove this connection in their meta-analysis(2016, p. 25). Another study, which approached the topic of presenteeism from a time demand perspective using the EWCS from 2010, was able to show that all variables associated with time demand (e.g. overtime, working in free time) have a significant influence on the occurrence of presenteeism. This was the case for employees, but especially for the self-employed (Nordenmark et al., 2019, p. 227). Studies that have dealt with the question of the influence of part-time work on the occurrence of presenteeism have not been able to prove a connection (Aronsson & Gustafsson, 2005, p. 962 ; Robertson et al., 2012). In contrast, some studies have been able to prove a connection between full-time work and presenteeism (Bockerman & Laukkanen, 2010, p. 45; Cho et al., 2016, p. 49).

The degree of control and autonomy provides information on the extent to which employees can influence work processes. The starting point is the assumption that people who have the power to influence the organization of work processes feel less pressure to come to work sick and are therefore not associated with presenteeism (Miraglia & Johns, 2016, p. 12). Similarly, since the degree of necessary work speed and the perception of set deadlines influence the likelihood of presenteeism, according to existing studies: For example, research by Caverley shows that deadlines are one of the top reasons why employees choose to go to work sick (Caverley et al., 2007, p. 315).

Colleagues can reduce the occurrence of presenteeism if there is good cooperation who can perform certain tasks in the event of sick leave. The presence of a supportive work environment, which includes cooperation with colleagues, has a reducing effect on the likelihood of presenteeism occurring (Goto et al., 2020, p. 567; Janssens et al., 2015, p. 336).

The possibility of telework can promote the occurrence of presenteeism: If employees who can telework are faced with the situation of becoming ill, a telework option is sometimes seen as a way of continuing to work even when ill. For example, one study found that telework may increase the risk of working while ill (Steidelmüller et al., 2020, p. 1004). A study by Gerich shows that teleworking is often used to cope with an increased workload. In this respect, it is not telework per se, but the design of the working conditions that increases the likelihood of presenteeism occurring (Gerich, 2022, p. 247).

In addition to the work-related factors, socio-demographic control variables are to be included in the analysis of the existing figures, which will be introduced into a further model in a second step (see explanations in the methods chapter of this article). On the one hand, gender is taken into account as a socio-demographic variable. The research situation on the gender variable is ambiguous. On the one hand, some studies have been able to demonstrate the influence of gender on the probability of presenteeism occurring (Aronsson et al, 2000; Aronsson & Gustafsson, 2005; Cho et al, 2016; Gustafsson Sendén et al, 2016; Leineweber et al, 2011).

Other studies were unable to demonstrate any difference between men and women when gender was taken into account (Gosselin et al., 2013; Gustafsson & Marklund, 2011). The study situation about the age of the

respondents revealed inconsistent results. The study by Aronsson & Gustafsson (2005) an increased probability in the 16-35 age group. Another study by Leineweber et al. (2011) was able to demonstrate an increased probability of occurrence for the 35-54 age group. Similarly, also Cho et al. (2016) show an increased probability of presenteeism for those aged 30 or older.

Finally, reference should be made to the influence of the respective level of education. No clear findings can be found here either. For example, a study by Preisendörfer (2010) showed that the probability of presenteeism decreases with increasing years of education. In a similar way Gustafsson & Marklund (2011) showed that the frequency of presenteeism among Swedish employees without a university degree is linked to presenteeism. A similar conclusion was reached by Cho et al. (2016) who found a correlation with presenteeism for Korean employees without a high school or university degree.

COVID-19 Pandemic

The COVID-19 pandemic is seen as an important contextual factor in the context of presenteeism, which has an influence on the willingness to show up at work despite illness. During the course of the pandemic, different phases were observed, each of which had a different impact on social life. One of the measures used to measure the severity of the measures taken is the Stringency Index (Figure 2). The measures taken are calculated into an index with 100 index points as the maximum. Measures taken into account include school closures, workplace closures, public information campaigns and the testing policy. The higher the index value, the tougher and stricter the measures for the country in question (Hale et al., 2021).

For Croatia, the phase at the beginning of the pandemic until the summer of 2020 and the phase from the beginning of 2021 until late summer of 2021 were the phases in which the toughest measures to combat the pandemic were taken in Croatia. It can therefore be assumed that employees in Croatia were most affected by the measures taken during these two phases, partly due to any restrictions on work operations.

Of particular interest is the consideration of workplace closures and stay-at-home regulations for Croatia during the pandemic presented in Figure 3.

Figure 2
COVID-19 Government Response: Stringency Index (Croatia)
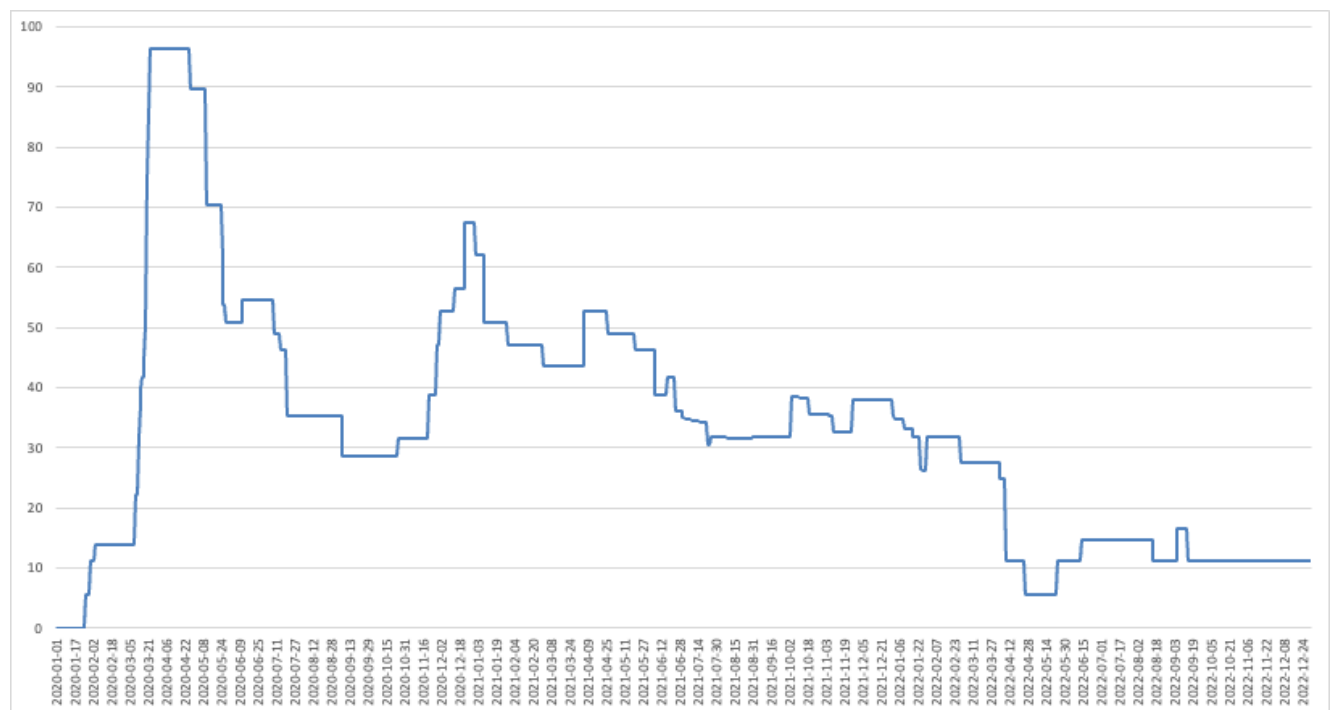
Source: Oxford COVID-19 Government Response Tracker (Hale et al., 2021)

Figure 3

COVID-19 Government Response: Workplace closure and stay-at-home requirements (Croatia)
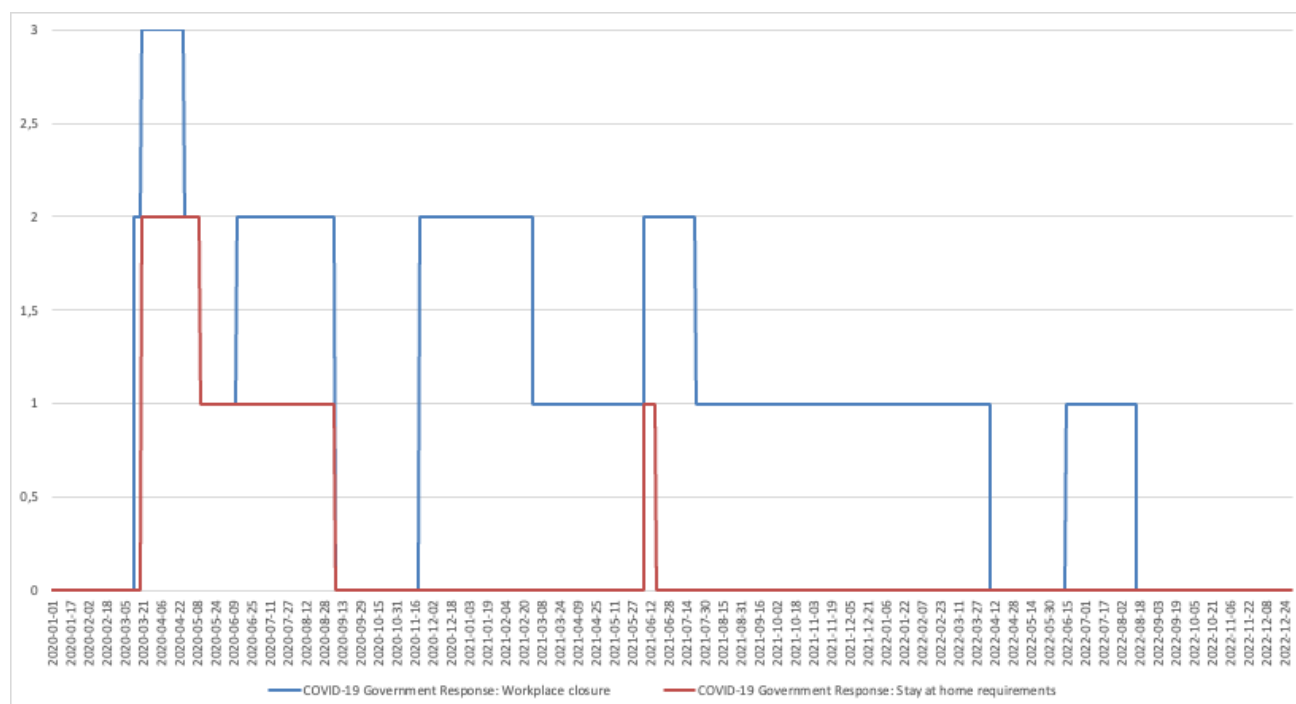
Source: Oxford COVID-19 Government Response Tracker (Hale et al., 2021)

These figures reflect those in the chart on the Stringency Index. Especially at the beginning of the pandemic, workplace closures and stay-at-home requirements were the strictest (0 = lowest value with no requirements; 3 = strictest value). The survey phase took place at a time when the requirements for workplace closures were somewhat stricter. Except for a brief phase in the middle of 2021, the stay-at-home regulations were not in force.

Hypotheses

The aim of this analysis is to investigate the differences in the influence of work-related factors on the occurrence of presenteeism. The data set of the European Working Condition Telephone Survey (EWCTS) from 2021 was used to calculate the probability of occurrence.

The following hypotheses were derived for the statistical analysis based on the studies presented above:

H1: There is a statistically significant relationship between work stressors (work demands, working high speed, working under tight deadlines, working in free time, working on short notice, and having a leadership role) and presenteeism.
H2: There is a statistically significant relationship between working time (weekly working hours, and part-time/full-time) and presenteeism.

H3: There is a statistically significant relationship between work autonomy and presenteeism.
H4: There is a statistically significant relationship between the degree of good cooperation with colleagues and presenteeism.
H5: There is a statistically significant relationship between telework and presenteeism.

Furthermore, three control variables are also used to calculate a further model. These three variables are gender, age and education.

Method

Instruments

Data from the European Working Condition Telephone Survey (EWCTS) for 2021 was used for this article. The EWCTS has been examining working conditions in various European countries at regular five-year intervals since 2005. The planned data collection in 2020 had to be cancelled after seven weeks due to the COVID-19 pandemic. In 2021, the survey was conducted by telephone instead of in person in 36 participating countries. The survey took place between March and November 2021. The data set for Croatia comprises 1800 participants. The EWCTS utilizes rigorous sampling methods to guarantee representation across diverse

sectors and demographics; however, the sample's representativeness may be affected by the timing of the survey (e.g. labour market disruptions and working conditions) and its methodology. Telephone surveys can present possible bias, since persons lacking access may have been excluded.

Dependent Variable (Presenteeism)

Respondents were asked "Over the past 12 months did you work when you were sick?" or, if the employment relationship had lasted less than twelve months, "Since you started your job, have you worked when you were sick?". The dependent variable was dichotomized (1=yes, 0=no presenteeism); the items "I was not sick", "Don't know" and "Refused" were therefore excluded from the analysis.

Independent Variables

The questionnaire comprises a series of thematically different questions. Variables for which a reference to work-related factors could be established were used for the analysis of the calculation.

An index consisting of seven variables was calculated for the variable "work demands", with the calculated alpha value tending to have a poor value (α=0.535). For these seven variables, the respondents were asked about the working conditions they are exposed to in their work (tiring positions, lifting or moving people, carrying or moving heavy loads, repetitive hand or arm movements, dealing with people, emotionally disturbing situations, working with devices). The scale for all seven items ranges from 1 to 7.

The item on whether a respondent is currently in a supervisor position was asked with the following question: "Do you have people under your supervision, for whom pay increases, bonuses or promotion depend directly on you?" (1=Yes, 2=No, 3=Don't know).

The working hours of the employment relationship were surveyed on the one hand by asking about the number of hours per week and the possible existence of part-time employment: the respondents were asked about their usual working hours per week: "How many hours do you usually work per week in your main paid job?" (in hours per week). The existence of a part-time or full-time position was indicated by means of "In your (main) job, do you work part time or full time?" (1=part time, 2=full time, 3=don't know, 4=refused).

An index of three variables was calculated for the variable "work autonomy" (α=0.765). For these three variables, the employee's autonomy in relation to the autonomous division of work tasks, the autonomous choice of working methods and the autonomy of work speed were surveyed. The scale for all three items ranges from 1 to 5. The measurement instrument from Breaugh (1985) was used.

Another variable is that of "Working in free time": "Over the last 12 months (in your main job), how often have you worked in your free time to meet work demands?" or, if the employment relationship has lasted less than 12 months, "Since you started your (main) job, how often have you worked in your free time to meet work demands?". The items were reduced and summarized as 1="At least weekly", 2="Monthly" and 3="Less often or never".

Employees were also asked whether they had to come into work at short notice: "Over the last 12 months (in your main job), how often have your been requested to come into work at short notice" or, if the employment relationship had lasted less than 12 months, "Since you started your (main) job, how often have you been requested to come into work at short notice?". The items were reduced and summarized to 1="At least weekly", 2="Monthly" and 3="less often or never".

The question of how much employees are confronted with a fast pace of work and tight deadlines was also of interest. In this regard, the interviewees were asked "And does your (main) job involve working at very high speed?" and "And does your (main) job involve working to tight deadlines?". The items were reduced and summarized to 1="Never or rarely", 2="Sometimes" and 3="Often or always".

Important with regard to cooperation with colleagues, the interviewees were asked, "To what extent do you agree or disagree with the following statements: There is good cooperation between you and your colleagues?" (strongly agree, tend to agree, neither agree of disagree, tend to disagree, strongly disagree, not applicable, don't know, refused). The items were subsequently summarized as 1="Agree", 2="Neither agree nor disagree" and 3="Disagree". There were no responses in the "disagree" item, so this item was not included in the analysis.

With regard to telework, the following categorization was adopted from the questionnaire: 1="Never/rarely"

2="Sometimes", 3="Often/always". The variable "Gender" was defined as "Would you describe yourself as a man, a woman or would you describe yourself in another way?". 1="Men" and 2="Women" were included in the analysis. The variable "Age" was queried using the question "Would you mind telling me how old you are?". The age was specified in "Age in years". The variable "Education" was asked by means of "What is the highest level of education or training you have successfully completed (usually by obtaining a certificate or diploma)?". The answers were categorized according to the logic of ISCED 2011. For the analysis, the groups were summarized as 2="Secondary education" and 3="Tertiary education"; the respondents selected for the analysis did not include any answers for 1="Primary education".

Data Analysis

A logistic regression was used to calculate the probability of occurrence. The variables included were first recoded and prepared for the calculation of the logistic regression. A linear regression was then calculated to check for collinearity and Mahalanobis, whereby both requirements were met. Outliers and missing variables were also excluded from the analysis. In the end, 491 people were included in the analysis.

Two models were calculated using logistic regression. The first model (M1) includes all work-related independent variables. The second model (M2) is an extension of the first model by controlling for socio-demographic data such as gender, age and education. Although the socio-demographic data fall under the category of person-related factors, these variables were nevertheless used as control variables for the calculation of M2. The SPSS statistics program was used for the calculation.

Results

Preliminary Analyses

The Table 1 describes the descriptive statistics of the variables considered. The data reveals that approximately 32% of the respondents included in the survey exhibited presenteeism. The work demands index has a rating of 2.66 on a seven-point scale. The index has a documented Cronbach's α coefficient of 0.535, which falls below the desired level of effectiveness. Most respondents are not in a managerial role. The respondents have an average workweek of approximately 41 hours, with a minority working part-time. The average score for job autonomy was 3.31 on a five-point scale, with a Cronbach α coefficient of 0.765. The respondents exhibited a tendency to engage in less work during their leisure time and also reported a lower occurrence of short-term job assignments with minimal notice. Employees who worked quickly and faced strict time limits were more likely to report this occurrence. A substantial quantity of additional time characterizes collaboration with colleagues as favourable. Regarding telework opportunities, the majority of the respondents never or rarely telework.

Table 1
Descriptive analysis (means, standard deviations and Cronbach's α; n = 491)

	Range	Mean	SD	Cronbach's α
Presenteeism (Yes/No)	0-1	0.3212	0.46741	-
Work demands (Index)	1-7	2.6632	0.66212	0.535
Working high speed	1-3	2.2343	0.77252	-
Working tight deadlines	1-3	2.0727	0.80154	-
Working in free time	1-3	2.5273	0.73570	-
Short notice	1-3	2.8788	0.38369	-
Supervisor (Yes/No)	1-2	1.8606	0.34671	-
Usual working hours per week	1-168	40.8848	7.39302	-
Part time (Yes/No)	1-2	1.9495	0.21921	-
Work autonomy (Index)	1-5	3.3141	0.94859	0.765
Good cooperation	1-2	1.0566	0.23124	-
Telework	1-3	1.5947	0.80603	-
Gender	1-2	1.6000	0.49039	-
Age	16-74	39.41	11.791	-
Education	2-3	2.5091	0.50042	-

Source: Author's own calculations based on EWCTS 2021

Regarding socio-demographic data, the female population accounted for 60% while the male population accounted for 40%. The average age of the selected respondents was approximately 40 years old, and they were fairly evenly divided between those with secondary and tertiary degrees.

Factors Influencing Presenteeism

A logistic regression was conducted to determine which independent variables (work demands, supervisor role, usual working hours per week, part-time/full-time, work autonomy, working in free time, short notice, working high speed, working tight deadlines, good cooperation with colleagues and telework) are predictors of presenteeism in Croatia in 2021. Data screening led to the elimination of several outliers, as presented within the methods chapter.

Regression results indicated that the overall model fit improved compared to the zero model (-2 Log likelihood = 529.481; zero model: -2 Log likelihood = 621.502) and was statistically reliable in distinguishing between presenteeism [$\chi^2_{(16)}$= 88.906, p<0.001]. The model correctly classified 70.5% of the cases. Regression coefficients are presented in Table 2.

Wald statistics indicated that work demands, working tight deadlines, lack of good cooperation with colleagues and telework predict presenteeism.

Table 2
Logistic Regression (Model 1 - control variables excluded)

	B	Wald	df	p	Odds Ratio
Work demands (Index)	0.368**	4.268	1	0.039	1.445
Working high speed					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.044	0.017	1	0.897	1.045
3 = Often or always	0.613*	3.408	1	0.065	1.846
Working tight deadlines					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	-0.292	0.950	1	0.330	0.747
3 = Often or always	0.563*	3.703	1	0.054	1.755
Working in free time					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.343	0.907	1	0.341	0.710
3 = Less often or never	-0.500	2.281	1	0.131	0.607
Working short notice					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.075	0.008	1	0.927	0.928
3 = Less often or never	-0.180	0.058	1	0.809	0.835
Supervisor Role					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	-0.242	0.616	1	0.433	0.785
Usual working hours per week	0.029	2.377	1	0.123	1.029
Part time					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	1.024	1.540	1	0.215	2.784
Work autonomy (Index)	-0.119	0.989	1	0.320	0.888
Good cooperation with colleagues					
1 = Agree	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Neither agree nor disagree	1.189***	6.684	1	0.010	3.282
Telework					
1 = Never/rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.010	0.001	1	0.975	1.010
3 = Often/always	0.467*	2.772	1	0.096	1.595

Notes: Dependent dichotomous variable: Presenteeism; *statistically significant at the 0.1 level (two-tailed); **statistically significant at the 0.05 level (two-tailed); ***statistically significant at the 0.01 level (two-tailed); n = 491; Nagelkerke R^2 = 0.231.
Source: Author's own calculations based on EWCTS 2021

Table 3
Logistic regression (Model 2 – control variables included)

	B	Wald	df	p	Odds Ratio
Work demands (Index)	0.329*	3.350	1	0.067	1.389
Working high speed					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.048	0.020	1	0.887	1.050
3 = Often or always	0.613*	3.226	1	0.072	1.845
Working tight deadlines					
1 = Never or rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	-0.264	0.751	1	0.386	0.768
3 = Often or always	0.596**	3.885	1	0.049	1.815
Working in free time					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	-0.355	0.953	1	0.329	0.701
3 = Less often or never	-0.545	2.620	1	0.106	0.580
Working Short notice					
1 = At least weekly	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Monthly	0.045	0.003	1	0.956	1.046
3 = Less often or never	-0.090	0.014	1	0.905	0.914
Supervisor role					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	-0.227	0.530	1	0.466	0.797
Usual working hours per week	0.031	2.584	1	0.108	1.032
Part time					
1 = Yes	Ref.	Ref.	Ref.	Ref.	Ref.
2 = No	1.069	1.649	1	0.199	2.911
Work autonomy (Index)	-0.103	0.721	1	0.396	0.902
Good cooperation with colleagues					
1 = Agree	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Neither agree nor disagree	1.195***	6.668	1	0.010	3.302
Telework					
1 = Never/rarely	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Sometimes	0.103	0.099	1	0.753	1.108
3 = Often/always	0.597	3.917	1	0.480	1.816
Gender					
1 = Male	Ref.	Ref.	Ref.	Ref.	Ref.
2 = Female	0.188	0.653	1	0.419	1.207
Age	0.021**	4.838	1	0.028	1.021
Education					
2 = Secondary Education	Ref.	Ref.	Ref.	Ref.	Ref.
3 = Tertiary Education	-0.262	1.027	1	0.311	0.769

Notes: Dependent dichotomous variable: Presenteeism; *statistically significant at the 0.1 level (two-tailed); **statistically significant at the 0.05 level (two-tailed); ***statistically significant at the 0.01 level (two-tailed); n = 491; Nagelkerke R^2 = 0.247
Source: Author's own calculations based on EWCTS 2021

A second logistic regression was conducted included the same variables as in M1 to determine which independent variables (work demands, supervisor role, usual working hours per week, part-time/full-time, work autonomy, working in free time, short notice, working high speed, working tight deadlines, good cooperation with colleagues and telework) as well as control variables (gender, age and education) are predictors of presenteeism in Croatia in 2021. Data screening led to the elimination of several outliers, as presented within the methods chapter. Regression results indicated that the overall model fit of the predictors was questionable

(-2 Log likelihood = 522.624; zero model: -2 Log likelihood = 621.502) but was statistically reliable in distinguishing between presenteeism [$\chi^2_{(19)}$ = 95.763, p<0.001]. The model correctly classified 72.9% of the cases. Regression coefficients are presented in Table 3. Wald statistics indicated that work demands, working tight deadlines, lack of good cooperation with colleagues, and age predict presenteeism.

Discussion

This study of employees in Croatia using EWCTS data from 2021 showed, based on the calculations for M1, that specific work demands placed on employees lead to a statistically significant increase in the probability for presenteeism (OR=1.445). This result suggests that the more demanding the specific work requirements placed on employees, the more likely presenteeism is to occur. This study is therefore consistent with the findings of Demerouti et al. (2009).

Working under tight deadlines shows an equally increased statistically significant probability of occurrence: The result from M1 suggests that employees in Croatia have a higher probability of occurrence compared to employees who never or rarely work under tight deadlines (OR=1.755). Employees who are confronted with tight deadlines are more likely to work sick in order to complete their workload. This result is also consistent with the study by Caverley et al. (2007) in which tight deadlines were cited as one of the main reasons for presenteeism. Frequent working high speed also increases the probability of presenteeism (OR=1.846). In this study, good cooperation with the respective work colleagues also proved to be an important predictor of the probability of presenteeism occurring. The result from Model 1 shows with statistical significance that the lack of good cooperation with colleagues increases the probability of presenteeism (OR=3.282).

With regard to telework, the results show that people who telework often or always are more likely to go to work sick (OR=1.595) which is in line with Steidelmüller et al. (2020).

In M2, the previously used variables were supplemented by control variables in a further model: gender, age, and level of education. The results of this model reveal differences compared to M1. The specific working demands remain statistically significant, showing that the probability of presenteeism is rises with more

demands (OR=1.445). Similar to M1, M2 shows that working high speed (OR=1.845) and the presence of tight deadlines (OR=1.815) has a statistically significant effect on the likelihood of presenteeism. M2 also shows that cooperation with colleagues has a preventive effect against presenteeism. Employees who state that they have neither good nor poor cooperation with their colleagues have a statistically significant higher risk compared to the reference group who have good cooperation with their colleagues (OR=3.302). The addition of socio-demographic variables shows that the age of employees has a statistically significant influence on the probability of presenteeism occurring (OR=1.021). This result differs from the results cited above in that age groups were compared with each other there, which were able to calculate an influence of age in the groups 16-35 and 30 years and over (Aronsson & Gustafsson, 2005; Cho et al., 2016; Leineweber et al., 2011).

No effect on the probability of presenteeism could be calculated for other variables. Thus, there was no difference in having a supervising role on the probability of risk. Similarly, working hours or the existence of part-time work had no influence on the probability of occurrence. Contrary to the assumption that the extent of control over one's own work processes (work autonomy) has an influence, no influence could be calculated on the basis of the available data. Additionally, working at short notice does not have a statistically significant influence on the probability of presenteeism. Telework only showed a statistically significant influence on the risk of occurrence in M1. The influence disappeared when the socio-demographic variables were added. When looking at the socio-demographic variables, a statistically significant result could only be calculated for age. The explanatory value, measured by Nagelkerke R^2, was 23.1% for M1 and slightly higher at 24.7% for M2.

Conclusion

Given the limited research of employees in Croatia, this article provides insights into the factors influencing the occurrence of presenteeism. The aim of this article was to investigate the influence of work-related factors on the likelihood of presenteeism for Croatia. Data from the European Working Condition Telephone Survey from 2021 was used for this purpose. During the survey phase from March to November 2021, Croatia, like other countries, found itself in a situation that was confronted with accompanying preventive measures in the wake of the COVID-19 pandemic. The strength of the measures was less comprehensive than in 2020. This was particularly the case in mid-2021.

The results of this study show that presenteeism for employees in Croatia is influenced by work stressors. The more extensive the conditions (such as carrying heavy loads, repetitive movements), the more frequently employees are confronted with deadlines or have to work under high speed, the more likely it is that an employee will go to work when sick.

In contrast, good cooperation with colleagues is an important factor. Employees with neither good nor poor cooperation with colleagues who could fill in in the event of illness show a higher risk of coming to work sick compared to employees who have good cooperation. Finally, the addition of socio-demographic variables shows that age is a predictor of attendance at work despite illness.

This study only looked at the work-related factors that influence the occurrence of presenteeism in Croatia. However, as mentioned in the introduction, there are a number of other factors in addition to work-related factors that can influence the likelihood of presenteeism occurring. In order to better understand the phenomenon of presenteeism for the Croatian case, subsequent studies should also examine the influence of other factors (such as organizational factors). Some items have a small number of cases. Future studies could try to increase the number of cases through longer or more intensive surveys. Another possibility would be to include further regions or countries in the analysis in a pooling procedure in order to obtain larger numbers of cases for an analysis.

As shown above, the survey took place during the COVID-19 pandemic. In this respect, the special nature of an existing pandemic must be taken into account when generalizing the results. Future studies should look at further data sets for Croatia - especially those collected after the COVID-19 pandemic - in order to be able to track the influence of the factors examined without the influence of preventive measures at the time of the COVID-19 pandemic. This study was done during the period of workplace closures and adaptations to remote work, both of which could have influenced the responses. Furthermore, the dependence on telephone interviews may have marginalized specific demographics. Consequently, these findings must be regarded with caution, and their applicability to other contexts or timeframes is restricted.

Beyond this, future studies should also take into account other factors that may be of interest in capturing the phenomenon of presenteeism. These include organizational factors (e.g. the influence of different forms of employment contracts) or perceived organizational justice. Future research should also contemplate larger and more representative samples, focusing on specific demographic groups or employing longitudinal study designs.

To date, there have been very few studies on the phenomenon of presenteeism in Croatia. Those studies that have been found for Croatia have mainly dealt with employees in the healthcare sector. This article examines those work-related factors that make presenteeism likely to occur, without limiting itself to a specific area of the working sectors in Croatia.

Based on these studies, companies can take a step towards preventing presenteeism. As can be seen in the analysis, some variables have an influence on the occurrence of presenteeism. Targeted measures that focus on those variables that have an influence on the probability of occurrence can reduce the occurrence and the associated consequences. This is primarily aimed at the specific design of the working conditions experienced, as well as taking into account other work stressors, which can subsequently lead to an increased perception of stress among employees.

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Z delom povezani dejavniki, ki so vplivali na prezentizem na Hrvaškem med COVID-19: Empirični pristop z uporabo logistične regresije

Izvleček

Članek analizira z delom povezane dejavnike, ki vplivajo na pojav prezentizma na Hrvaškem v času pandemije COVID-19. Glavni cilj je preučiti povezavo med ključnimi spremenljivkami in razširjenostjo prezentizma med zaposlenimi na Hrvaškem. V študiji je bila uporabljena logistična regresijska analiza za preučitev podatkov iz evropske telefonske raziskave o delovnih pogojih (EWCTS) iz leta 2021, ki je zajemala vzorec 491 zaposlenih iz Hrvaške. V študiji so bili raziskani dejavniki, povezani z delom, kot so delovne zahteve, delovni čas, nadzorne odgovornosti, delo na daljavo in sodelovanje s sodelavci. Analiza upošteva tudi demografske kontrolne spremenljivke, vključno s starostjo, spolom in stopnjo izobrazbe. Ugotovitve kažejo, da obstaja pomembna povezava med dejavniki stresa pri delu in prezentizmom. Zaposleni, ki jim primanjkuje dobrega sodelovanja s sodelavci, so bolj nagnjeni k prisotnosti na delovnem mestu, tudi ko se ne počutijo dobro. Ugotovljeno je bilo tudi, da je starost pomemben dejavnik. Študija kaže, da z delom povezani dejavniki vplivajo na prezentizem na Hrvaškem. Da bi podjetja ublažila negativne učinke prezentizma, bi morala sprejeti strategije za izboljšanje delovnih pogojev in spodbujanje ugodnega delovnega vzdušja. Rezultati ponujajo dragocene perspektive za prihodnje raziskave in praktične strategije za zmanjšanje prezentizma in izboljšanje dobrega počutja zaposlenih.

Ključne besede: prezentizem, COVID-19, delo, Hrvaška

Exogenous Variables and their Influence on Domestic Credit Provision in Nigeria: Evidence from Quantile Regression

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Abstract

The relevance of domestic credit to an economy has spurred interest in studies that seek to examine the factors that determine it. In this study, the focus is to evaluate the role of exogenous factors in influencing domestic credit provision in Nigeria. The study used a monthly dataset that covered the period from 2007M12 to 2024M5 under the framework of quantile regression. The findings of the study reveal that oil price had a positive and significant impact on domestic credit provision at all the quantiles, while world interest rate had a negative and significant impact on domestic credit provision at the 25th quintile. The exchange rate and bank reserves exerted a positive and significant impact on domestic credit provision at all the quantiles, while the impact of the Treasury bills rate was positive and significant only at the 25th and 50th quantiles. The study suggests that, in regulating credit provision in Nigeria, monetary authorities should closely monitor these exogenous variables as well as exchange rate movement.

Introduction

In an economy that experiences a shortfall in investment funds, credit provision should be an issue of great concern. Nigeria is a typical case where access to funds for investment and other purposes is scarce, prompting the cost of borrowing to be high. The government over the years has put in place several measures to boost credit to the private sector including the increase in the capital base of deposit money banks and selective credit control measures. Despite these measures, there is still a paucity of credits to the domestic economy. The World Bank has defined domestic credit provided by the financial sector to include all the credit extended to various sectors of the economy. The financial institutions that offer these credits include the monetary authorities, deposit money banks and other financial institutions among which are, foreign exchange companies, pension funds and insurance corporations. The growth of domestic credit has been

sluggish over the years as can be seen in Figure 1. Several factors have been fingered to be responsible for the low credit supply in the country. Among these factors are inadequate collateral securities, excessive lending rate, fear of non-performing loans on the part of banks and other lending institutions as well as their apathy towards short-term borrowing. As observed by Ozili & Ndah (2021), volatility in oil receipts and the implementation of unfavourable monetary policy equally play an adverse role. Furthermore, Eseyin *et al.* (2022) noted that both real gross domestic product (GDP) and domestic debt influence credit availability in Nigeria.

Figure 1

Trend in Credit to the Private Sector, in billions of Naira
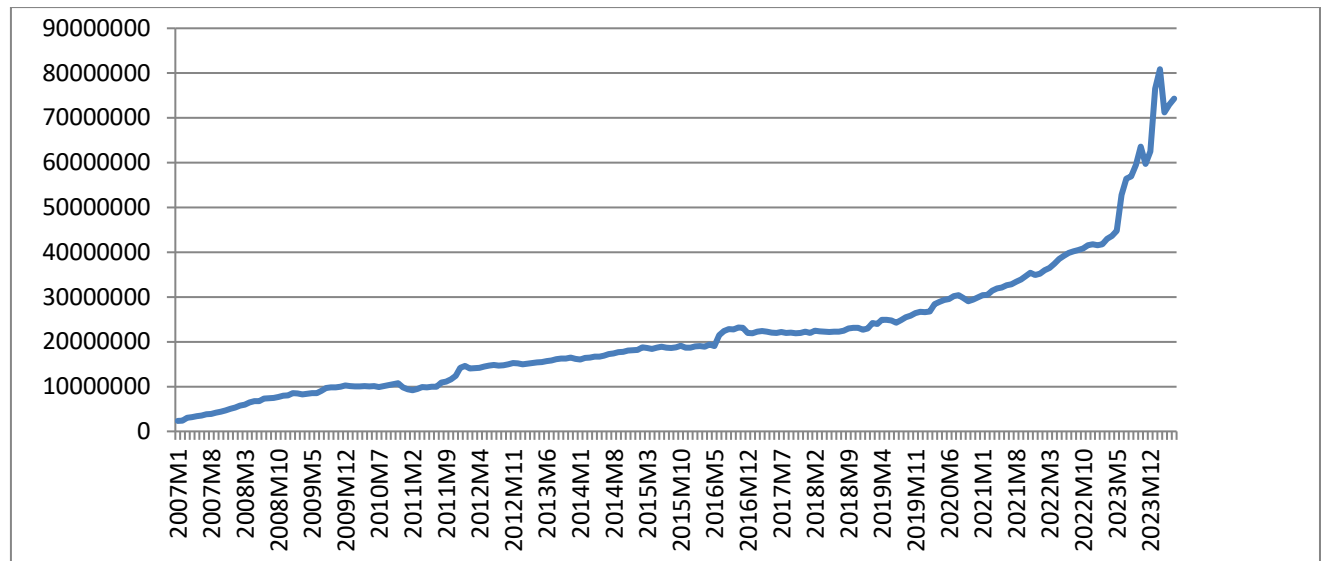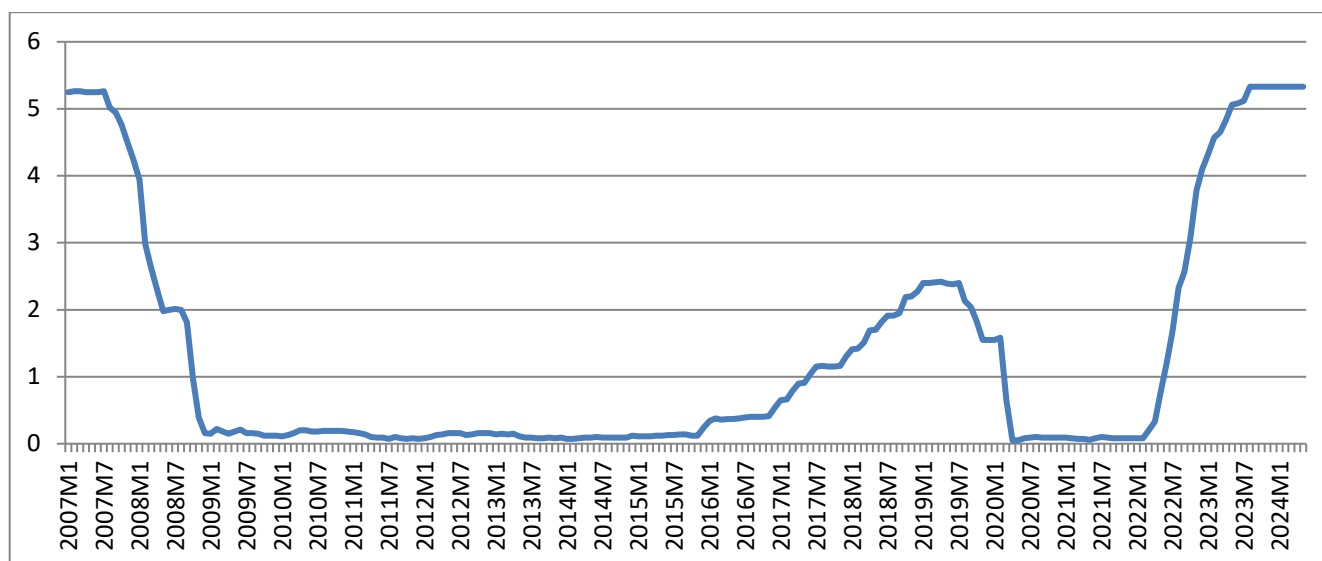

Source: CBN (2024)

It is apposite at this juncture to state that beyond domestic factors, external factors may also influence credit availability in Nigeria since the country is tied to the global financial system through embracing financial liberalization. It is hard these days to identify a country which is an island unto itself. In a nutshell, the influence of some exogenous factors such as world interest rate and volatility in oil prices on domestic credit provision cannot be wished away. Regarding the world interest rate, the hegemonic role of the US in the international monetary system has been crucial in influencing the domestic interest rates of many economies, mainly developing countries. In Figure 2, it is revealed that the US interest rate was flat between 2008 and January 2016. After January 2016 the rate exhibited a rising trend and got to a peak in January 2019 after which it decelerated. Between March 2020 and March 2022, the rate remained flat and then has been accelerating. It should be noted that before 2009, the rate was high and during these periods capital markets across the world experienced much liquidity as US interest rate-bearing investment assets yielded high returns.

However, the bubble burst around 2009, leading to serious repercussions across various financial jurisdictions. It can also be inferred that the effect of the COVID-19 pandemic may have contributed to the flat trend in the rate between March 2020 and March 2022. Arteta, Kamin & Ruch (2022) have observed that in emerging market and developing economies (EMDES), rising US interest rate has led to significant spillovers on borrowing costs. This is equally supported by Miranda-Agrippino & Rey (2020) who revealed that the contractionary monetary policy stance of the US led to a contraction in the supply of global credits. In summary, the tightening of US monetary policy which manifests in rising interest rate has wider implications for credit provisions across global economies.

Figure 2

Trend in World Interest Rate, in percentage, proxy by US interest rate

Source: CBN (2024)

Another exogenous factor that shapes domestic credit provision, especially for oil-dependent countries such as Nigeria is oil price fluctuations. The oil sector has been playing a dominant role in Nigeria's economy ever since the discovery of crude oil in commercial quantity, so much so that it has almost crowded out other sectors of the economy. The volatile nature of oil prices as depicted in Figure 3 is a major source of concern to both monetary and fiscal authorities in the country. In periods of rising oil prices, the reserve position of the country is improved and this rubs off on the liquidity in the banking sector. As a reaction to this, monetary authorities in the country often embark on monetary tightening as they anticipate rising inflation. The implementation of such contractionary monetary policy through an increase in the benchmark monetary policy rate (MPR) and/or increase in the reserve requirement often results in reducing the liquidity position of deposit monetary banks; thus affecting their ability to extend credit. Monetary policy implementation during periods of falling oil prices equally has its repercussion on banks' ability to extend credit. Apart from the impact of monetary policy implementation during periods of oil price fluctuations, the banking system in Nigeria is equally adversely affected particularly in periods of falling oil prices. Since the banks and other lenders usually invest in oil and gas, oil price falls could result in non-performing loans which adversely impact their liquidity position and the ability to extend credit. The impact of fluctuations in oil prices has been identified by scholars such as Miyajima (2017) who revealed that the stability of banks in oil-exporting countries has been affected by the volatility in the international price of oil.

From the foregoing, it is obvious that credit provision may be influenced by factors other than domestic variables. The main objective of this present study is to determine the effect of world interest rate and oil price on domestic credit provision in Nigeria. Since the major policy thrust of the Central Bank of Nigeria (CBN) is inflation-targeting, identifying the roles of these variables in shaping the direction of credit provision is crucial. The study is also necessary, considering that the Nigerian financial system is tied to the vagaries of developments in the international financial system just as the country's source of income is mainly the oil sector. While the focus of previous papers was mainly on domestic factors that influence bank performance, this paper contributes to the extant literature by integrating two exogenous variables in a model and evaluating their impact on domestic credit provision in Nigeria.

The author argues that methodologies that handle symmetric relationships which have been used variously in the literature concerning this topic is not ideal since they cannot deal with possible asymmetric relationships between these two exogenous variables and domestic credit provision. Against this backdrop, the study used quantile regression in the analysis to take care of the existence of asymmetric relationship. One major limitation of the study is the non-inclusion of some relevant variables in the model because of a lack of data

on them. Though their inclusion could impact the outcome of the study differently, providing more insights into the findings; however, this does not significantly affect the focus of the paper.

The structure of the paper is as follows: Section 1 focuses on the literature review, Section 2 presents the methodology adopted, Section 3 describes the quantile regression model, and Section 4 presents and discusses the results of the findings. The study ends by summarizing the findings and drawing conclusions from the analysis.

Figure 3
Trend in Oil Price, in US Dollars
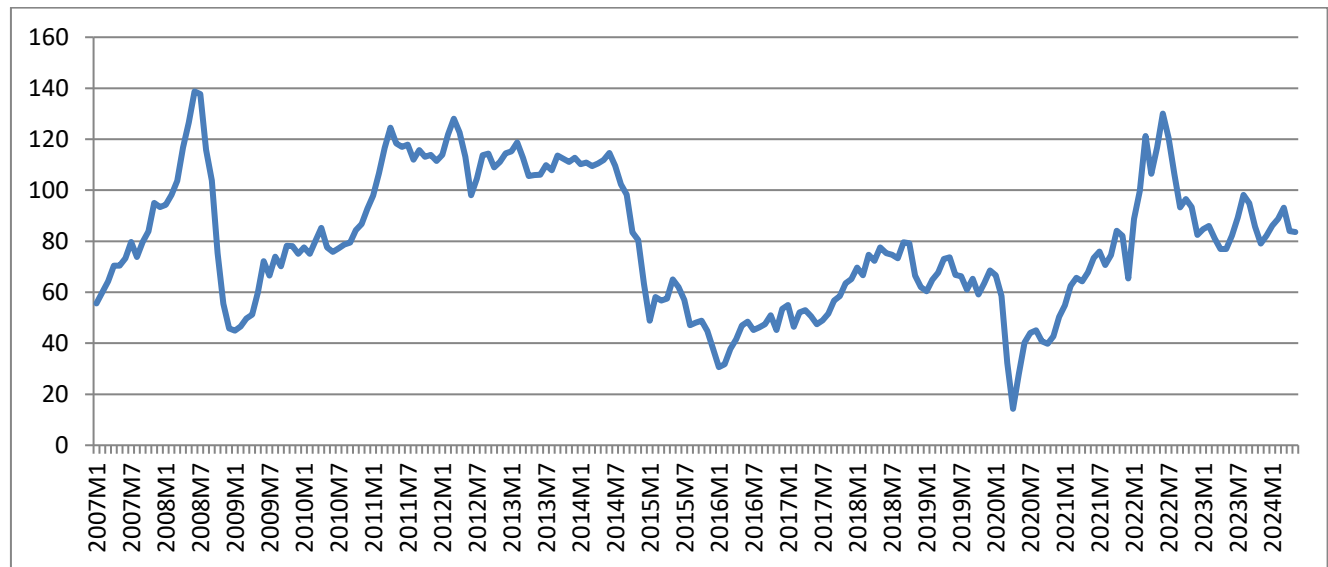
Source: CBN (2024)

Literature Review

The determinants of domestic credit provision have often occupied the interests of researchers across different countries. Interests in this area are based on the fact that credit availability is a panacea for investment, consumption and the smooth running of the economy. Several factors have been identified in literature to influence the direction of credit just as different methodologies have been adopted in the analysis. A preponderance of past studies has focused mainly on the internal factors that influence domestic credit provision. However, in this present review, an attempt is made to focus on papers that examined the influence of oil price and world interest rate on credit provision.

Extant literature on the link between oil price and domestic credit provision have revealed some outcomes which are germane for policy simulation, particularly in oil-dependent countries. These studies have shown that the performance of banks is impacted by oil price movement and this has an influence on their ability to extend credit. A study in Bahrain by Hawaldar *et al.* (2017) indicates that during the oil pre-crisis period,

there was a noticeable difference between the performance of conventional banks and Islamic banks, but during the crisis period, there was no such significant difference. In Qatar, Saif-Alyousfi *et al.* (2018) found that shock in oil price had a significant influence on the non-performing loans of banks, exposing them to risk. In Nigeria, Osuma *et al.* (2019) identified the existence of a significant and positive impact of oil prices on the banks' performance under three main indicators such as net interest margin, profit after tax and current ratio. The study observed that these indicators are influenced mainly during periods of declining oil prices.

Adetutu *et al.* (2020) found that in Kazakhstan, an increase in oil prices had an adverse impact on the productivity of banks. In Oman, Vidal & Vidal (2021) found a positive and statistical impact of oil price on Return on equity (ROE) and a non-significant positive impact of oil price on Return on assets (ROA) and Capital Adequacy Ratio (CAR). Wang (2021) observed that banks whose operations are exposed to oil-dependent counties in the US experienced a fall in demand deposit. The study noted that these banks are faced with liquidity problems which force them to offer high deposit rates

but reduce lending to small-scale businesses. In Iran, Seyyedkolaee, Aghaei & Abbaspoor (2022) found that fluctuations in oil price had a significant adverse effect on the growth of credit of specialized banks. For Russia, Albulescu (2022) revealed that rising oil prices impacted positively on the stability of public banks in the long run, but in the short run the impact is not noticeable. Gelain, Lorusso & Zaman (2024) found that shocks in oil prices resulted in a decline in the credit extended by the US banks which led to an increase in the country's credit spread.

The link between world interest rate and economic activities has also been documented in literature. In a cross-country study comprising both advanced and emerging economies, Iacovielloy & Navarro (2018) indicated that contractionary monetary policy in the US led to a massive decline in economic activities in developing economies compared to advanced economies. In another study, Miranda-Agrippino & Rey (2020) found that contractionary monetary policy in the US caused a decline in domestic credit provision globally. Such monetary tightening affected global lending adversely as it encouraged a decline in asset prices. In South Africa, Ntshuntsha (2021) revealed that US monetary policy hurt the country's growth in both the short run and the long run. Arteta, Kamin & Ruch (2022) found that in Emerging and Developing Economies (EMDE), a rise in the US interest rates influences movements in financial markets.

From the foregoing, evidence shows that past literature has focused more on either the impact of oil price on bank performance or the impact of foreign interest rate on bank performance. However, little evidence is provided on the combined impact of these variables on domestic credit provision. Since the two variables are sensitive to the economy of developing countries; mainly oil-producing countries like Nigeria, studying their joint impact on credit provision is necessary. The findings of this present study support the outcomes of extant literature that have found the two variables to influence bank performance. However, by focusing explicitly on the influence of the two variables on domestic credit provision, this present study contributes to the literature as it provides results that can challenge future studies.

Data and Empirical Methodology

Data Sources

This paper used a monthly dataset to examine the influence of two exogenous variables on the provision of domestic credit in Nigeria over the period ranging from 2007M12-2024M5. The two exogenous variables used are oil price and world interest rate. In addition to these, three control variables, namely: exchange rate, bank reserve and Treasury bill rate were included in the study. While the oil price is a proxy by the international price of Bonny Light (Nigeria's brand of oil) and is measured in US Dollars, the world interest rate which is measured in percentage is a proxy by the US Federal Fund rate (Kim & Roubini, 2000). Except for data on world interest rate which was obtained from the Federal Reserve Bank of St. Louis, the data for other variables were sourced from the Central Bank of Nigeria Statistical Bulletin. Exchange rate, bank reserve and credit to the private sector are in log form to enhance ease of interpretation and for normalization. The exchange rate which is expressed as the rate at which the US Dollars exchange for Nigeria's domestic currency (naira) is measured in nominal form. On the other hand, while both bank reserve and credit to the private sector are measured in Billions of naira, the Treasury bill rate is measured in percentage. The rationale for the inclusion of bank reserve is that the ability of banks to extend credit is based on the volume of reserves they have. The higher the bank reserve, the more ability banks have to give out loans. In another vein, the Treasury bill rate is included because it serves as an alternative investment outlet available to banks. The higher the Treasury bill rate, the possibility of banks to lower the credit extended to the private sector since banks consider investing in the Treasury as an avenue to generate more revenue, especially because Treasury bill rate is a secure investment outlet compared to credit extended to the private sector. The same argument can be extended to exchange rate inclusion in the study. Trading in exchange rate provides an investment opportunity for banks in Nigeria as they prefer to buy exchange rate at the official rate and resell to the parallel market at a higher spread. Thus, they would rather invest in such venture than grant loans to the private sector because of the short-term period in which returns from exchange rate transaction can be realized.

The study did not consider all the variables that could impact domestic credit provision in Nigeria. The reason is to avoid over-parametrizing the model with its consequent loss of degrees of freedom. Secondly, there is a paucity of data on most of these variables in Nigeria.

Estimation Techniques

Before estimating the quantile regression model, the paper presents the descriptive statistics and carries out some pre-diagnostic tests such as the correlation matrix test, the unit root test and the cointegration test. The test for unit root was conducted using both the augmented Dickey Fuller (ADF) and the Phillip Perron (PP), while the ARDL bounds test was used to conduct the cointegration test. The ARDL bounds test was chosen because the unit root unit test indicated that the variables exhibited an admixture of the order of integration; that is they are both *I(0)* and *I(1)*. The impact of the exogenous variables on domestic credit provision was evaluated using the quantile regression. The choice of the quantile regression is because of its ability to capture the asymmetric association between oil price and domestic credit provision on one hand and world interest rate and domestic credit provision on the other hand. As observed by Yang, Wang and He (2016), this method of analysis handles the issue of heteroskedasticity in the error terms as well as being suitable in cases where there are outliers in the model (Benoit & Van den Poel, 2017). Quantile regression has also been noted to be an extension of the linear regression model which is essential if the researcher aims to have ample knowledge of how the predictor variables affect the response distribution (Hao & Naiman, 2007). The fact that quantile regression handles asymmetric relationship makes it superior to other estimation techniques such as the error correction model, the ordinary least squares (OLS) method and other methods which rely on linear relationship. These models cannot dictate if a negative or positive relationship exists between oil price and credit to the private sector on the one hand and between foreign interest rate and credit to the private sector on the other hand. It should be noted that such asymmetric relationships are possible and as such should not be overlooked.

Methodology

The quantile regression model that guided this study is specified as follows:

$$y_t = x_t' \lambda + \varepsilon_t \tag{1}$$

$$E\left(\frac{y_t}{x_t}\right) = x_t' \lambda \tag{2}$$

$$Qy_t\left(\frac{\eta}{x_t}\right) = x_t' \lambda \eta \tag{3}$$

$$\lambda\eta = \lambda + \psi\mu^{-1}(\eta) \tag{4}$$

Where λ is vector of unknown coefficients, Equation 2 defines marginal effects at a specific quantile, η denotes quantile to be estimated, ε_t is random term.

The sample is demarcated into four quintiles, namely: 25th, 50th, 75th and 90th to ensure that all the quantiles have adequate sample from the 209 observations to avoid the problem of loss of degrees of freedom. The quantile regression minimizes the median which differs from the OLS that minimizes the sum of squares. The minimization of median is often referred to as the least absolute-deviation regression which is specified as follows:

$$\sum_{t=1}^{T} \eta \, |\varepsilon_t| + \sum_{t=1}^{T} (1-\eta)|\varepsilon_t| \tag{5}$$

Where $\eta|\varepsilon_t|$ denotes symmetric penalty for under-prediction, $(1-\eta)$ presents symmetric penalty for over-prediction.

The symmetric division allows for simultaneity in the evaluation of both the upward and downward response of domestic credit to fluctuations in the exogenous variables.

The ηth quantile regression estimator $\lambda\hat{\eta}$ minimizes over $\lambda\eta$ the following objective function:

$$Q(\lambda\eta) = \sum_{t=1}^{T} \lambda \quad |y_t - x'_t\lambda\eta| + \sum_{t=1}^{T} \eta \tag{6}$$
$$(1-\eta)|y_t - x'_t\lambda\eta|$$

$$y_t \geq x_t\lambda \qquad\qquad y_t < x_t\lambda$$

where $0 < \eta < 1$

In the above quantile regression model, while y_t is the dependent variable (log of domestic credit to the private sector - LCRPRIV), x'_t represents the vector of explanatory variables: oil price (OILP), world interest rate (WINTR), log of the exchange rate (LEXCHR), Treasury bill rate (TBR) and log of bank reserve (LBRESERV).

Results and Discussion

The descriptive statistics are presented in Table 1 with findings showing that credit to the private sector, oil price and world interest rate have mean values of 7.2, 79.6 and 1.3 with standard deviation of 0.3, 25.9 and 1.7, respectively. In a similar vein, the exchange rate, Treasury bill rate and bank reserve have mean values of 2.4, 7.9 and 6.4 with standard deviation of 0.2, 4.3 and 0.6, respectively. It is also shown that while credit to the private sector, oil price and world interest rate have the range of 1.5, 124.4 and 5.3, respectively; exchange rate, Treasury bill rate and bank reserve have the range of 1.13, 17.0 and 22.4, respectively. Credit to the private sector, Treasury bill rate and bank reserve exhibited negative skewness, while oil price, world interest rate and exchange rate exhibited negative skewness. All the variables are heavy-tailed since their kurtosis is positive.

Table 1

Descriptive Statistics

	LCRPRIV	OILP	WINTR	LEXCHR	TBR	LBRESERV
Mean	7.247	79.603	1.298	2.369	7.854	6.376
Median	7.272	77.180	0.200	2.293	8.270	6.530
Maximum	7.907	138.740	5.330	3.191	17.030	7.336
Minimum	6.368	14.280	0.050	2.064	0.000	4.985
Std. Dev.	0.298	25.984	1.742	0.242	4.310	0.614
Skewness	-0.425	0.1171	1.358	0.919	-0.031	-0.482
Kurtosis	3.300	2.135	3.433	3.675	1.916	2.104
Jarque-Bera	7.085	6.980	65.936	33.413	10.261	15.113
Probability	0.028	0.030	0.000	0.000	0.005	0.000
Observations	209	209	209	209	209	209

Source: Author's calculations

In Table 2, the results of the correlation matrix reveal that while oil price and Treasury bill rate have a negative and low correlation with credit to the private sector, the correlation between world interest and credit to the private sector is low and positive. However, a strong positive correlation was observed between credit to the private sector and bank reserve and also between credit to the private sector and exchange rate.

Table 2

Correlation Matrix Results

	LCRPRIV	OILP	WINTR	LEXCHR	TBR	LBRESERV
LCRPRIV	1	-0.076	0.415	0.954	-0.084	0.834
OILP	-0.076	1	0.028	-0.240	0.232	-0.195
WINTR	0.415	0.028	1	0.382	0.003	0.071
LEXCHR	0.954	-0.240	0.382	1	-0.106	0.842
TBR	-0.084	0.232	0.003	-0.106	1	-0.065
LBRESERV	0.834	-0.195	0.071	0.842	-0.065	1

Source: Author's calculations

Table 3

Unit Root Results

	ADF		PP	
	Level	First Diff.	Level	First Diff.
LCRPRIV	-1.63(0.460)	-6.82(0.000)*	-2.60(0.094)***	-12.00(0.000)*
OILP	-2.88(0.0494)***	-10.64(0.000)*	-2.62(0.089)***	-10.55(0.000)*
WINTR	-1.69(0.434)	-6.36/(0.000)*	-1.64(0.459)	-6.32(0.000)*
LEXCHR	-3.05(0.999)	-9.82(0.000)*	-3.111(0.999)	-10.22(0.000)*
TBR	-2.38(0.148)	-19.52(0.000)*	-2.95(0.041)**	-1.59(0.000)*
LBRESERV	-1.59(0.485)	-12.70(0.000)*	-1.42(0.571)	-25.45(0.000)*

Note: p-values in parenthesis. Asterisks, *, **, *** indicates the statistical significance of a variable at 1%, 5% and 10%.

Source: Author's calculations

The results of the unit root test in Table 3 indicate that under the ADF, the only oil price has no unit root (is stationary) at the 10 percent level of significant, while others have unit root (are not stationary). Under PP, credit to the private sector, oil price and Treasury bill rate exhibit no unit root at level, while others have a unit root. However, after first differencing, all the variables have no unit root both under the ADF and PP. That is to say that all the variables become *I(1)* after taking the first difference.

The results of the unit root have shown that the variables have a mixture of order of integration. While some exhibited no unit root at level, others achieved no unit root after the first difference. On grounds of the results, the usual Johansen test for cointegration is not appropriate to be used. Thus, the study turned to the auto-regressive distributed lag (ARDL) bounds test form of cointegration which is suitable when the variables have an admixture of order of integration. The result of the ARDL test for cointegration in Table 4 reveals that the F-statistic is 10.53 which is higher than both the upper critical bound (2.62) and lower critical bound (3.35) at the 5% level. Consequently, the study concludes that the variables are cointegrated.

Table 4
ARDL Cointegration Result

Test Statistic	Value	K
F-statistic	10.53	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Author's calculationS

The results of the OLS and quantile regression in Table 5 indicate that under the OLS, oil price impacted positively and significantly the credit to the private sector at the 10% level of significance. The result shows that if the oil price rises by one US Dollar, credit to the private sector improves in average by 0.7 percent. On the other hand, findings reveal that the world interest rate has a negative impact on credit to the private sector even though the result is not significant. The impact of the exchange rate is positive and significant. The result indicates that if the exchange rate depreciates by one percent, credit to the private sector increases in average by 0.58 percent. It is also found that both bank reserve and Treasury bill rate have positive and significant impact on credit to the private sector. One percentage points increase in the Treasury bill rate leads to an increase in credit to the private sector in average by 0.17 percent, while a percentage increase in bank reserve leads to an increase in credit to the private sector in average by 0.24 percent.

The quantile regression results in Table 5 reveal that oil price impacted positively and significantly credit to the private sector in all the quantiles. The rise in oil price by one US Dollar leads to an increase in credit to the private sector by 0.7 percent at the 25th, 50th, 75th quantiles and 0.4 percent at the 90th quantile. It should be noted that the oil sector contributes to a high percentage of the country's GDP. An increase in oil price has the tendency to improve the liquidity position of the country which rubs off on other sectors of the economy, including the banking sector. Thus, banks usually have much leverage to extend credit to the private sector in periods of rising oil prices. It is against this backdrop that the CBN often employs contractionary measures to curb the credit ability of banks in such periods. The results of both the OLS and quantile regression are thus in line with apriori expectation. The positive impact of oil price on bank performance has been identified in Nigeria by Osuma *et al.* (2019), in Oman by Vidal and Vidal (2021) and in Russia by Albulescu (2022).

In another vein, it is found that the world interest rate only has a significant impact on credit to the private sector at the 25th quantile, while the results of other quantiles are not significant. The finding shows that if the world interest rate rises by one percentage point, credit to the private sector reduces in average by 3.96 percent. Interest rate on foreign assets is considered as an investment alternative by domestic investors including the banking sector. Therefore, if the world interest rate rises, the interest rate on these foreign assets increases in tandem, prompting domestic banks to channel their investment to the foreign jurisdiction where these investments are domiciled and this may have the tendency to reduce credit extension to the private sector. This argument therefore justifies the result of this study. However, it is possible that a rise in world interest rate may lead to an increase in domestic credit provision. This could occur when the total interest income accruing from such foreign investment is higher than the total interest cost (Adrian & Shin, 2011). In such a situation, the liquidity position of the banks is increased, giving them the leverage to offer more credit. An asymmetric relationship between world interest rate and domestic credit provision is therefore possible. Such a possibility has been revealed in this present study at the 90th quantile where the world interest rate exerted a positive but non-significant impact on domestic credit provision.

The declining impact of the world interest rate on domestic credit provision finds corroboration in a study by Miranda-Agrippino & Rey (2020).

The study finds that the OLS result of the exchange rate is in line with the quantile regression results as it indicates that across all the quantiles, the exchange rate was found to impact positively on credit to the private sector. The depreciation of the exchange rate by one percent leads to an increase in credit to the private sector by 0.63, 0.58, 0.54 and 0.58 percent at the 25th, 50th, 75th, and 90th quintile, respectively. These results do not follow popular expectation since banks have the tendency to channel their investment to foreign asset-bearing interest rate during period of exchange rate depreciation because the returns will be high when exchanged with the domestic currency. A plausible reason for the rise in domestic credit to the private sector arising from exchange rate depreciation could be that incomes from these foreign investments and other sources improves the liquidity position of the banks; incentivizing them to extend more credit. Also, it should be noted that banks in Nigeria are fond of buying foreign currencies (mainly the US Dollars) at the official rate in anticipation of selling them at the parallel segment of the market in order to take advantage of the high spread. The result of the impact of the exchange rate on credit to the private sector finds support in a study in Nigeria by Olaoluwa & Shomade (2017).

From another angle, findings indicate that the Treasury bill rate impacted positively and significantly on the domestic credit to the private sector at the 25th and 50th quantiles, while the impact in other quantiles is positive, though not significant. If the Treasury bill rate rises by one percentage points, domestic credit to the private sector increases by 0.6 percent and 0.2 percent at the 25th and 50th quantiles, respectively. It is found that across the various quantiles, bank reserve has positive and significant impact on domestic credit to the private sector which follows the OLS result. Findings reveal that if bank reserve increases by one percent, domestic credit to the private sector rises by 0.25, 0.24, 0.24 and 0.20 percent at 25th, 50th, 75th and 90th quantiles, respectively. These results are in line with apriori expectation since banks lend out of their reserve. The higher the bank reserve, the more incentives banks have to extend credit to the private sector.

Table 5
OLS and Quantile Regression Results

Variables	OLS	25th Quantile	50th Quantile	75th Quantile	90th Quantile
OILP	0.0007* (0.0001)	0.0007* (0.0001)	0.0007* (0.0001)	0.0007* (0.0001	0.0004* (0.0001)
WINTR	-0.0170 (0.0139)	-0.0396* (0.0079)	-0.0170 (0.0139)	-0.0019 (0.0080)	0.0012 (0.0101)
LEXCHR	0.5826* (0.0596)	0.6286* (0.0671)	0.5826* (0.0596)	0.5385* (0.0561)	0.5826* (0.0839)
TBR	0.0017*** (0.0009)	0.0057* (0.0009)	0.0016*** (0.0009)	0.0010 (0.0010)	0.0012 (0.0013)
LBRESERV	0.2433* (0.0161)	0.2500* (0.0405)	0.2433* (0.0161)	0.2427* (0.0146)	0.2035* (0.0102)
Constant	4.2702* (0.1125)	4.0705* (0.1312)	4.2702* (0.1125)	4.3964* (0.1419)	4.5864* (0.1853)
Pseudo R-squared	0.8252				
Adjusted R-squared	0.8209				
Observations	209	209	209	209	209

Note: Standard errors are in parenthesis and the asterisks, *, **, *** denote statistical ignificance at 1%, 5% and 10%.
Source: Author's calculations.

Conclusion

This present study applied the quantile regression model to examine the pass-through of two exogenous variables (oil price and world interest rate) to domestic credit provision in Nigeria. Findings indicate that under both the OLS and quantile regression, oil price exerts a positive and significant influence on credit to the private sector. However, the world interest rate is found to negatively impact credit to the private sector with the result being significant only at the 25th quantile. In another vein, while exchange rate and bank reserve have

a positive and significant impact on credit to the private sector under the OLS and across all the quantiles, the impact of the Treasury bill is positive under the OLS and at both the 25th and 50th quantiles. Judging from the results of both the OLS and quantile regression, evidence has shown that while under the OLS, oil price has a positive impact on domestic credit provision, however; the results under the quantile regression show that the impact is both positive and negative (asymmetric) even though the negative impact which occurred at the 90th quantile is not significant. Also, it is noteworthy that world interest rate did not exert any significant impact on domestic credit provision under the OLS, however, under the quantile regression; a significant negative impact was revealed at the 25th quantile. What these prove is that the OLS method is not adequate enough to capture the actual relationship between domestic credit provision and the exogenous variables included in the study.

On grounds of the regression results, the study concludes that exogenous variables have influence on domestic credit provision in Nigeria. However, of the two exogenous variables included in the study, the influence of oil price on domestic credit provision is more pronounced as the impact occurred at all the quantiles. The outcome implies that both world interest rate and oil price movement should be consciously monitored when framing up policies to regulate domestic credit provision in Nigeria. Since income from the sale of crude oil occupies a prominent place in the sources of income in Nigeria, the monetary authorities often adjust the monetary policies to checkmate the inflationary impact of rising oil prices, especially regarding the possibility for credit expansion. This study has therefore provided further evidence as to the need for such measure as well as going further to reveal that beyond the impact of oil price, world interest rate equally plays a crucial role in shaping domestic credit extension in Nigeria. As such, it is recommended that these two variables should be simultaneously watched to appropriately regulate domestic credit provision in Nigeria. In particular, during periods of rising oil prices, short-term selective credit measure should be implemented. This will entail a directive to the banks and other lending institutions to channel much of their improved liquidity to the productive sectors of the economy such as the manufacturing and the agricultural sectors. This measure will reduce the tendency for such increased liquidity to cause inflation. Also, as a way to reduce the shock arising from an increase in the world interest rate, the monetary authorities should deliberatively float several investment outlets through the deepening of the capital market. Such outlets should be such that they provide reliable and relatively high yields on investment to enable banks and other domestic investors to avail themselves of such opportunity to invest in the domestic economy. With this in place, the tendency to invest in foreign interest rate-bearing assets will reduce, thus helping to reduce capital outflows. In addition to this, exchange rate policy should be used to direct domestic credit since its continuous depreciation has been shown to encourage credit expansion, which though crucial for increased investment, may be inimical to the quest for price stability.

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Eksogene spremenljivke in njihov vpliv na zagotavljanje domačih kreditov v Nigeriji: Dokazi na podlagi kvantilne regresije

Izvleček

Pomen domačega posojila za gospodarstvo je spodbudil zanimanje za študije, ki poskušajo preučiti dejavnike zagotavljanja domačih posojil. V tej študiji se osredotočamo na oceno vloge eksogenih dejavnikov pri vplivanju na zagotavljanje domačih kreditov v Nigeriji. V študiji je bil uporabljen mesečni niz podatkov, ki je zajemal obdobje od decembra 2007 do maja 2024, v okviru kvantilne regresije. Ugotovitve študije razkrivajo, da je cena nafte pozitivno in pomembno vplivala na zagotavljanje domačih kreditov v vseh kvantilih, medtem ko je svetovna obrestna mera negativno in pomembno vplivala na zagotavljanje domačih kreditov v 25. kvantilu. Devizni tečaj in bančne rezerve sta pozitivno in pomembno vplivala na zagotavljanje domačih posojil v vseh kvantilih, vpliv obrestne mere zakladnih menic pa je bil pozitiven in pomemben le v 25. in 50. kvantilu. Študija predlaga, da bi morala monetarna oblast pri uravnavanju zagotavljanja kreditov v Nigeriji pozorno spremljati te eksogene spremenljivke in gibanje deviznega tečaja.

Ključne besede: domača posojila, denarna politika, obrestna mera, devizni tečaj, kvantilna regresija

Assessing the Consequences of Natural Disasters on Sustainability in Rural Municipalities: Evidence from Loška Dolina

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Abstract

This study examines the impact of natural disasters on the sustainable development of the rural municipality of Loška Dolina, focusing on the 2014 ice storm and subsequent floods. Through semi-structured interviews with seven key stakeholders, including local government, civil protection, and affected individuals, the research analyzes the disasters' effects on the economic, social, and environmental pillars of sustainability. The ice storm damaged forests and infrastructure, while floods caused soil contamination and habitat disruption. Despite these challenges, the community showed resilience and increased climate awareness. The SWOT analysis highlights both opportunities in the timber industry and challenges in disaster preparedness. The study emphasizes integrating disaster risk reduction into sustainable development planning.

Introduction

Natural disasters pose significant challenges to sustainable development, particularly in rural areas where economic, social, and environmental systems are often fragile and interdependent. As defined by the United Nations, sustainable development involves balancing economic growth, social equity, and environmental protection (United Nations, 1987). This balance is critical for building community resilience, yet natural disasters disrupt economies, displace communities, and degrade environments, challenging achieving sustainability (Cutter, 2016). Understanding the multifaceted impacts of such events is essential for devising effective strategies to mitigate their effects and promote resilience.

Rural municipalities like Loška Dolina, situated in Slovenia's Primorsko-Notranjska region, exemplify the vulnerabilities associated with geographic and climatic conditions. Renowned for its extensive forests, karst landscapes, and small settlements, Loška Dolina faces heightened risks from natural disasters. In 2014, the municipality

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experienced two severe events: a destructive ice storm in January and catastrophic floods in November. These disasters caused extensive environmental, infrastructural, and economic damage, significantly impacting the municipality's sustainable development. The ice storm devastated forest ecosystems and infrastructure, leading to widespread power outages and ecological harm (ARSO, 2015). The floods exacerbated the situation, damaging homes, farms, and public infrastructure and creating long-term social and economic challenges (URSZR, 2014).

Despite the growing body of literature on disaster impacts, research has predominantly focused on urban areas, leaving a gap in understanding the unique challenges faced by rural municipalities (Birkmann et al., 2010). This study aims to address this gap by examining the effects of the 2014 natural disasters on Loška Dolina's sustainable development, specifically their impacts on the municipality's environmental conditions, local economy, and social dynamics.

The central research question guiding this study is: How did the 2014 ice storm and floods affect Loška Dolina's sustainable development? To answer this, the study sets the following objectives:

1. Analyze the environmental impacts of the 2014 disasters.
2. Assess the economic consequences and recovery opportunities.
3. Examine social effects and community responses.
4. Evaluate disaster prevention and mitigation measures.

Loška Dolina's experience provides a valuable case study for understanding how rural communities respond to and recover from natural disasters. By addressing this research gap, the study offers insights for policymakers seeking to integrate disaster risk reduction into sustainable development planning.

In conclusion, this research emphasizes the necessity of strengthening resilience by addressing economic, social, and environmental challenges holistically. The findings aim to inform adaptive strategies for disaster preparedness and recovery in rural municipalities, promoting long-term sustainability and resilience.

Literature Review

Natural Disasters and Sustainable Development

Natural disasters such as earthquakes, floods, hurricanes, and droughts arise from Earth's natural processes, causing extensive damage, loss of life, and socio-economic disruption (Smith, 2020). These events are categorized by the United Nations Office for Disaster Risk Reduction (UNDRR) into four primary types: meteorological, geological, hydrological, and climatological (UNDRR, 2020). Understanding these categories provides a foundation for assessing their impacts and developing effective responses.

In disaster impacts, the concept of vulnerability plays a central role. Vulnerability is a community's susceptibility to harm, determined by the degree of hazard exposure, sensitivity, and recovery capacity (Cutter et al., 2020). This susceptibility directly influences the socio-economic and environmental disruptions caused by disasters.

Resilience, closely linked to vulnerability, is a community's ability to adapt to and recover from disasters. Enhancing resilience is a critical component of sustainable development, as it ensures that communities can maintain economic growth, social inclusion, and environmental protection in the face of disaster risks (Adger, 2019).

As articulated by the Brundtland Commission, sustainable development seeks to balance these three dimensions—economic growth, social inclusion, and environmental protection—for long-term viability (United Nations, 1987; Adams, 2020). In this context, addressing vulnerability and building resilience are essential for reducing the adverse impacts of natural

disasters and achieving sustainable development goals.

Impact of Natural Disasters on Rural and Urban Areas

Natural disasters affect rural and urban areas differently due to variations in population density, infrastructure, and resources. Urban areas often experience immediate, visible damage due to their dense populations and complex infrastructure. Meanwhile, less densely

populated rural areas face prolonged recovery due to limited resources (Birkmann et al., 2019).

In urban areas, robust emergency services and infrastructure help mitigate immediate effects. However, disruptions can cause widespread economic losses, as seen in Japan's 2011 earthquake and tsunami, which caused $235 billion in damages (World Bank, 2019). Conversely, dependent on agriculture and natural resources, rural areas suffer long-term consequences. The 2010 Pakistan floods, for example, devastated rural communities by destroying crops and displacing millions (Khan & Salman, 2019). Recovery is often slower due to inadequate infrastructure (Morton, 2019).

Cutter et al. (2020) developed the Social Vulnerability Index (SoVI), showing rural areas tend to have higher vulnerability due to lower incomes, aging populations, and dependence on agriculture. Wisner et al. (2019) highlight additional challenges rural communities face, such as limited access to healthcare and education, which hinder recovery efforts.

Current Policies and Strategies for Addressing Natural Disasters

Effective disaster management requires policies that address immediate responses and build long-term resilience. These strategies should be integrated into sustainable development plans to prioritize disaster risk reduction (DRR).

The Sendai Framework for Disaster Risk Reduction 2015-2030 emphasizes understanding disaster risk, improving governance, and integrating DRR into development policies (UNDRR, 2015). It advocates a multi-hazard approach to disaster management.

In the European Union, the Civil Protection Mechanism fosters cooperation in disaster response, while the EU Cohesion Policy funds resilience projects through sustainable land use and infrastructure (European Commission, 2020). National strategies, like Japan's Basic Act on Disaster Management and the United States' National Disaster Recovery Framework, emphasize community-based disaster management and public participation (Government of Japan, 2020; FEMA, 2019).

In Slovenia, the Administration for Civil Protection and Disaster Relief (URSZR) manages disaster responses, focusing on early warning systems and public awareness (URSZR, 2020). Slovenia's National Strategy for Sustainable Development includes resilience-building measures like sustainable land use (Government of Slovenia, 2020).

Integrating DRR into sustainable development policies presents challenges, especially in coordinating efforts across government levels and sectors. Effective disaster management requires a multi-stakeholder approach involving government agencies, NGOs, the private sector, and local communities (Blaikie et al., 2019). Developing countries especially need increased DRR investment (UNDRR, 2020).

Best practices for DRR include investing in resilient infrastructure, involving communities in disaster planning, and incorporating DRR into development strategies. For example, flood defences and earthquake-resistant buildings can mitigate disaster impacts (Hallegatte et al., 2020). Engaging communities in disaster planning strengthens social cohesion and meets local needs (Shaw, 2020). Environmental restoration projects can enhance natural resilience by buffering against future disasters (Burby, 2020; IPCC, 2022).

Urban areas suffer immediate and visible damage, while rural areas experience prolonged recovery due to weaker infrastructure. A comprehensive approach combining resilient infrastructure, community engagement, and sound land use planning improves disaster response and long-term resilience. Aligning with international frameworks like the Sendai Framework helps ensure communities are better prepared for future disasters.

Methodology

Research Design

This study uses a qualitative research design to examine the impact of natural disasters on the sustainable development of Loška Dolina. A qualitative approach is ideal for capturing the complexity of the interactions between natural disasters and sustainability's economic, social, and environmental dimensions (Creswell & Poth, 2018). Semi-structured interviews were chosen as the primary data collection method, as they allow for gathering detailed, nuanced information while maintaining flexibility for deeper exploration of relevant topics (Kallio et al., 2016).

Study Area

Loška Dolina, located in Slovenia's Primorsko-Notranjska region, covers 166.8 square kilometres with a population of around 3,500 (Statistical Office of the Republic of

Slovenia, 2020). The region features diverse natural landscapes, including forests and karst phenomena, with an economy based on agriculture, forestry, and tourism, alongside small and medium-sized enterprises. Its geographic and climatic conditions make it particularly vulnerable to natural disasters. In 2014, a severe ice storm hit the municipality in January, and catastrophic floods in November caused significant damage to the environment, infrastructure, and local economy, emphasizing the need for effective disaster management (URSZR, 2014).

Data Collection

Purposive sampling was used to select participants who could provide detailed insights into the impact of the 2014 natural disasters. Seven key stakeholders were chosen based on their direct involvement and expertise, ensuring diverse perspectives. The selection criteria included:

- Local government representatives involved in disaster response and policy-making,
- Civil protection authorities responsible for crisis management,
- Business owners whose operations were affected, and
- Residents who experienced the disasters firsthand.

Semi-structured interviews were conducted in person between March and May 2024, allowing for in-depth exploration of participants' experiences and ensuring a consistent time frame for data collection. Open-ended questions guided by the research objectives focused on the disasters' impact on sustainable development in Loška Dolina. Each interview lasted between 60 and 90 minutes, was recorded and transcribed with participants' consent, and followed strict ethical guidelines to ensure confidentiality. The interview procedure was designed and conducted in line with established qualitative research practices as outlined by Gill et al. (2008) and Saunders et al. (2015).

The semi-structured questionnaire used in this study was designed to address the research objectives and facilitate an in-depth exploration of the impacts of the 2014 natural disasters on Loška Dolina's sustainable development. It consisted of four thematic sections, each focusing on a specific pillar of sustainable development or related disaster management topics:

Introduction and Background Information

1. This section included demographic questions to

collect basic information about the participants, such as their role in the community, profession, and direct experiences with the 2014 disasters. These questions helped contextualize the subsequent responses.
2. Environmental Impacts
3. Questions in this section explored the participants' observations of environmental damage caused by ice storms and floods. Topics included the extent of forest and soil degradation, water contamination, and the effectiveness of ecological restoration efforts.
4. Economic Consequences
5. This section focused on the economic repercussions of the disasters, including impacts on agriculture, forestry, and local businesses. It also examined opportunities for recovery, such as new economic activities and support mechanisms.

Social Dynamics and Resilience

6. Questions in this section addressed the social consequences of the disasters, such as displacement, emotional stress, and changes in community cohesion. Participants were also asked about the role of local authorities, civil protection, and community networks in disaster response and recovery.
7. Disaster Prevention and Mitigation Measures
8. The final section assessed the participants' perspectives on the adequacy of current disaster prevention strategies and suggested improvements for future preparedness. Topics included the role of early warning systems, public education, and land-use planning.

The semi-structured nature of the questionnaire allowed for flexibility, enabling participants to elaborate on their experiences and perspectives while ensuring that all key topics were addressed systematically. This approach

effectively captured official responses and community experiences, providing a comprehensive understanding of the effects of disasters.

Data Analysis

The data collected from semi-structured interviews were analyzed using thematic analysis, a method for identifying, organizing, and interpreting patterns within qualitative data (Braun & Clarke, 2006). This process involved six systematic steps, each yielding specific

results that contribute to answering the research questions:

1. Familiarization: The initial step involved thoroughly reading and re-reading the interview transcripts to develop a deep understanding of the data. During this stage, we noted recurring topics such as the impact of disasters on community resilience and environmental degradation, which set the foundation for further analysis.
2. Coding: We systematically coded the transcripts, identifying relevant data points linked to the three sustainability pillars: environmental, social, and economic. For example, codes like "forest damage," "community support networks," and "economic disruptions" emerged as critical elements.
3. Theme Development: The codes were grouped into preliminary themes that represented overarching concepts. For instance:
   o Environmental Impact: Loss of biodiversity and increased soil erosion.
   o Social Impact: Strengthened community cohesion despite displacement.
   o Economic Impact: Short-term opportunities in construction alongside long-term challenges in agriculture.
4. Theme Review: The initial themes were reviewed and refined to ensure they accurately reflected the data. This step involved cross-referencing themes with interview excerpts, leading to adjustments such as combining related sub-themes like "economic challenges" and "post-disaster recovery activities" into a broader theme of "Economic Adjustments."
5. Defining Themes: Final themes were clearly defined and named, with detailed descriptions summarizing their essence. For example:
   o *Environmental Sustainability*: Highlights the dual impact of disaster-induced degradation and the potential for reforestation initiatives.
   o *Community Resilience*: Captures the social solidarity that emerged in disaster response efforts.
   o *Economic Adaptation*: Focuses on both the immediate economic disruptions and the subsequent opportunities in infrastructure rebuilding.
6. Report Production: The themes were organized into a coherent narrative addressing the research questions. This included presenting findings like the significant role of community networks in recovery and the need for sustainable land use practices to mitigate future risks.

By explicitly detailing these steps and their associated results, the analysis ensures a coherent progression, creating a 'red thread' that integrates the data with the research objectives. This clarity enhances the understanding of how disasters have shaped sustainability efforts in Loška Dolina.

Additionally, a SWOT analysis was conducted to assess the strengths, weaknesses, opportunities, and threats related to Loška Dolina's sustainable development following the 2014 disasters. SWOT analysis is a strategic tool for identifying internal and external factors influencing an organization's or community's resilience and vulnerability (Gürel & Tat, 2017).

Results

Findings from Interviews

The 2014 ice storm and subsequent floods caused significant environmental damage, particularly in forested areas, where widespread tree damage resulted in biodiversity loss and habitat disruption. Floods worsened the situation with soil erosion, water contamination, and destruction of agricultural land, putting additional stress on the environment.

Economically, the disasters severely impacted agriculture and forestry, with substantial losses in crops, livestock, and timber. Disruptions in transportation and communication further slowed economic activities, causing a temporary economic decline. However, recovery efforts created opportunities, such as increased demand for construction and repair services, offering a brief economic boost.

Socially, the disasters displaced residents, led to property loss, and caused emotional trauma, but they also strengthened community solidarity. Social networks and mutual support were crucial in helping residents cope and recover. Local authorities and civil protection agencies effectively coordinated relief efforts, though the interviews revealed a need for improved public education on disaster preparedness.

Loška Dolina's disaster management demonstrated strengths in communication and response coordination. However, stakeholders identified areas for improvement, including better infrastructure, more comprehensive risk assessments, and enhanced disaster preparedness education.

Impact on Sustainable Development

The 2014 disasters greatly impacted Loška Dolina's

sustainable development, affecting its economy, society, and environment. Agriculture and forestry were severely impacted, with financial losses from destroyed crops and livestock, while infrastructure damage disrupted access to markets and services. Nonetheless, the post-disaster period spurred temporary economic activity in the construction sector and encouraged discussions on resilient agricultural practices, such as agroforestry and soil conservation.

Socially, the disasters caused displacement and emotional distress. However, strong community bonds helped facilitate recovery. While local authorities were praised for coordinating relief efforts, the need for improved disaster preparedness and public education was evident, with suggestions for community drills and training sessions to reduce future vulnerability.

Environmentally, the loss of forest cover and soil erosion diminished land productivity. Contaminated water sources posed public health risks and threatened biodiversity. Stakeholders emphasized the need for reforestation projects, soil conservation, and water protection efforts to build resilience and mitigate future disaster impacts.

SWOT Analysis

The SWOT analysis provided a structured assessment of the strengths, weaknesses, opportunities, and threats to Loška Dolina's sustainable development following the 2014 disasters.

The SWOT analysis of the economic pillar highlighted the vulnerabilities in Loška Dolina's economy, such as its dependency on agriculture and forestry, which makes it particularly sensitive to environmental disruptions. However, the availability of local resources and the potential for more resilient agricultural practices present opportunities to mitigate these risks.

Table 1
SWOT Analysis of Loška Dolina Sustainable Development - Economic Pillar

Strengths	Weaknesses	Opportunities	Threats
Local solid businesses rooted in agriculture and forestry	High dependency on agriculture and forestry	Development of sustainable agricultural practices	Recurring natural disasters and climate change
Availability of local resources (e.g., timber)	Limited financial resources for recovery	Demand for construction and repair services post-disaster	Loss of agricultural productivity due to environmental degradation

Source: Own construction of the authors

Table 2
SWOT Analysis of Loška Dolina Sustainable Development - Social Pillar

Strengths	Weaknesses	Opportunities	Threats
Strong community cohesion	Limited public awareness of disaster preparedness	Community-based preparedness programs	Emotional stress from recurring disasters
Effective coordination by local authorities	Emotional trauma from property loss	Strengthening social networks	Potential weakening of social cohesion if recovery efforts are uneven

Source: Own construction of the authors

In the social pillar, strong community bonds were a major asset, helping residents cope with the disasters. However, limited public awareness and emotional trauma were identified as weaknesses. Community-based disaster preparedness programs were seen as a critical opportunity to build resilience.

Table 3

SWOT Analysis of Loška Dolina Sustainable Development - Environmental Pillar

Strengths	Weaknesses	Opportunities	Threats
Rich natural landscapes and biodiversity	Environmental degradation (loss of forest cover, soil erosion)	Reforestation and soil conservation projects	Ongoing environmental degradation and climate change
Established conservation efforts	Limited resources for environmental restoration	Sustainable land use practices	Increased vulnerability to future disasters

Source: Own construction of the authors

The environmental SWOT analysis underscored the importance of leveraging Loška Dolina's natural assets and conservation efforts to enhance resilience. While the region suffers from significant environmental degradation, there are clear opportunities for reforestation and sustainable land use practices. However, ongoing threats such as climate change and the potential for recurring disasters remain critical concerns.

The 2014 natural disasters profoundly and multifacetedly impacted Loška Dolina's sustainable development. While the community demonstrated resilience, particularly in its social cohesion, the economy and environment remain vulnerable. The findings from this study provide essential insights for local authorities and policymakers to enhance disaster preparedness, promote long-term environmental sustainability, and build economic resilience. Addressing the identified weaknesses and threats while leveraging opportunities in agriculture, forestry, and community engagement can significantly improve the region's capacity to withstand future disasters.

Discussion

Interpretation of Results

This study underscores the profound and multifaceted effects of the 2014 natural disasters on Loška Dolina's economic, social, and environmental pillars of sustainable development. These findings are consistent with prior research on the complex interplay between natural disasters and sustainability (Cutter et al., 2020; Hallegatte et al., 2019).

Economic Impact: Economically, the disasters caused widespread damage to critical sectors such as agriculture and forestry, which form the backbone of Loška Dolina's economy. The ice storm resulted in the loss of vast forested areas, reducing timber resources and biodiversity, while the subsequent floods destroyed crops, livestock, and infrastructure. These events disrupted livelihoods and posed significant challenges to long-term economic stability, particularly for a rural municipality with limited financial reserves. Nevertheless, the recovery phase revealed opportunities for economic diversification. The increased demand for construction and repair services following the disasters stimulated short-term economic activity and created jobs, demonstrating the potential of post-disaster recovery to catalyze specific sectors (Hallegatte & Vogt-Schilb, 2020). Efforts to integrate resilience-building into economic strategies, such as promoting sustainable forestry and agroforestry, could reduce vulnerability to future events and foster more robust economic foundations.

Social Impact: Socially, the disasters presented challenges and opportunities for community resilience. The displacement of residents, property loss, and emotional trauma highlighted the vulnerabilities of rural communities. However, the disasters also showcased the strength of social capital in Loška Dolina. Residents banded together, strengthening community bonds through mutual aid and support networks. This aligns with the findings that robust social networks are crucial in disaster recovery and resilience (Aldrich & Meyer, 2015). Local authorities were praised for coordinating relief efforts, though the lack of systematic disaster preparedness training and public education revealed significant gaps. Initiatives such as community disaster drills, awareness campaigns, and capacity-building programs were suggested as vital steps to empower residents and reduce future risks (Shaw, 2020).

Environmental Impact: Environmentally, the disasters severely damaged Loška Dolina's natural landscape. The ice storm devastated forest ecosystems, leading to biodiversity loss and disruption of habitats, while the floods exacerbated soil erosion, water contamination, and agricultural land degradation. These impacts not only threatened ecological balance but also jeopardized long-term sustainability. Restoration projects, such as reforestation and soil conservation, emerged as critical measures to mitigate the damage and promote ecological recovery (Birkmann et al., 2019). Furthermore, the

disasters underscored the importance of integrating sustainable land use practices and climate-adaptive strategies into regional planning to build resilience against future environmental shocks.

Overall, this study highlights the interconnectedness of economic, social, and environmental dimensions in the context of natural disasters. Addressing the vulnerabilities exposed by the 2014 events while leveraging the strengths demonstrated during recovery is crucial for promoting sustainable development in Loška Dolina. The findings underscore the need for a holistic, multi-dimensional approach to disaster risk reduction, resilience building, and sustainability planning.

Policy Implications

The findings point to several policy recommendations for Loška Dolina and similar rural areas. Economic diversification is crucial to reduce reliance on agriculture and forestry. Policies should encourage alternative activities such as agroforestry, which integrates trees into farming to enhance resilience (Schoeneberger, 2019). Promoting tourism and renewable energy can also open new economic avenues.

Strengthening social networks is vital for building resilience. Disaster preparedness programs, regular community drills, and training sessions should be prioritized (Shaw, 2020). Establishing community-based disaster management groups could also enhance emergency coordination.

Reforestation and soil conservation projects should be prioritized to restore ecosystems and strengthen resilience (IPCC, 2022). Encouraging sustainable agricultural practices like organic farming can mitigate environmental damage and enhance long-term sustainability (Garnett et al., 2013).

Disaster risk reduction (DRR) should be integrated into land use planning and infrastructure development. Policies should discourage construction in high-risk areas, such as floodplains, and promote resilient building materials (Burby, 2020). Additionally, improved early warning systems and emergency response capabilities can mitigate future risks.

Limitations of the Study

This study has limitations. The small sample size of seven stakeholders may not capture the full range of perspectives in the community. Future studies with more

extensive and more diverse samples could offer broader insights. Additionally, the focus on one rural municipality limits the generalizability of the findings. Comparative studies across multiple regions could provide a more comprehensive understanding.

The qualitative approach, while providing valuable insights, is subjective. Triangulating these findings with quantitative data, such as economic assessments and environmental monitoring, would improve validity.

Finally, this study focuses on short-term disaster impacts. Long-term effects may evolve, and future research could explore how resilience develops. Longitudinal studies would provide deeper insights into long-term sustainability and resilience.

Despite these limitations, the study emphasizes integrating disaster risk reduction into sustainable development strategies. Addressing economic, social, and environmental dimensions will help policymakers build more resilient rural communities and reduce vulnerability to future disasters.

Conclusion

Summary of Findings

This study examined the impacts of the 2014 natural disasters on Loška Dolina's sustainable development by interviewing key stakeholders. It analyzed the effects on economic, social, and environmental dimensions, highlighting the challenges and opportunities for resilience building.

Economically, the disasters severely affected agriculture and forestry, critical sectors for Loška Dolina's stability. The area's reliance on these sectors increased vulnerability, leading to significant losses. However, the recovery phase revealed opportunities for economic diversification, particularly in construction, indicating the potential for innovation-driven resilience.

Socially, the disasters strengthened community cohesion, with mutual support crucial for recovery. Local authorities and civil protection agencies played a significant role in coordinating responses. However, the lack of public awareness of disaster preparedness revealed the need for more robust community-based education programs.

Environmentally, the disasters caused severe damage, including deforestation and soil erosion. This emphasizes

the importance of sustainable land use and restoration efforts, reinforcing the need to integrate disaster risk reduction with sustainable development (IPCC, 2021; Shaw, 2020).

Recommendations

Based on the findings of this study, a series of recommendations are proposed to strengthen resilience and promote sustainable development in Loška Dolina and comparable rural municipalities. These recommendations are organized according to the economic, social, environmental, and disaster risk reduction dimensions of sustainable development:

1. Enhancing Economic Resilience
    o   Economic Diversification: Encouraging diversification of economic activities, such as fostering tourism development, renewable energy projects, and small enterprises, can reduce reliance on agriculture and forestry, thereby increasing economic stability (Schoeneberger, 2019).
    o   Sustainable Agricultural Practices: Promoting resilient agricultural approaches, including agroforestry and organic farming, can enhance the sustainability and adaptability of local agricultural systems (Garnett et al., 2013).
2. Strengthening Social Resilience
    o   Disaster Preparedness Programs: Regular community disaster preparedness drills and training sessions are essential to enhance public awareness and improve the community's response capabilities in future disasters (Shaw, 2020).
    o   Community-Based Management: Strengthening social cohesion by forming community-led disaster management groups can enhance collective resilience and ensure effective response coordination (Aldrich & Meyer, 2015).
3. Promoting Sustainable Environmental Practices
    o   Reforestation and Soil Conservation Initiatives: Prioritizing reforestation and soil conservation projects is crucial for restoring degraded ecosystems and mitigating the risks associated with future natural disasters (IPCC, 2022).
    o   Sustainable Land Use Policies: Developing and enforcing policies that discourage construction in high-risk areas, such as floodplains, and promoting using resilient building materials can significantly reduce environmental vulnerability (Burby, 2020).

4. Integrating Disaster Risk Reduction into Development Planning
    o   Comprehensive Disaster Risk Reduction (DRR) Strategies: Integrating DRR measures into all levels of development planning can ensure that long-term sustainability and resilience objectives are systematically addressed (Hallegatte et al., 2019).
    o   Improved Early Warning Systems: Enhancing early warning systems and strengthening emergency response infrastructure can play a critical role in reducing the impact of future disasters (UNDRR, 2015).

Future Research

To advance the understanding of disaster resilience and inform policy development, future research should address several critical areas:

*   Longitudinal Studies: Investigating the long-term impacts of natural disasters through longitudinal studies would provide insights into the evolution of resilience over time and the effectiveness of recovery strategies (Cutter et al., 2020).
*   Comparative Analyses: Cross-regional comparisons of rural municipalities can help identify shared challenges and practical strategies, offering a broader basis for generalizing findings and developing targeted interventions (Birkmann et al., 2019).
*   Interdisciplinary Approaches: Integrating socio-economic and environmental factors is essential to comprehensively assess the multifaceted effects of natural disasters on sustainable development (Garnett et al., 2013).
*   Quantitative Evaluations: Employing economic and environmental assessments to measure the outcomes of resilience strategies can enhance the evidence base for disaster risk reduction (Hallegatte & Vogt-Schilb, 2020).
*   Policy Evaluation: Systematic evaluations of existing disaster risk reduction (DRR) policies are

necessary to identify strengths, address shortcomings, and ensure alignment with sustainability objectives (UNDRR, 2015).

This study emphasizes integrating disaster risk reduction with sustainable development strategies in rural communities such as Loška Dolina. Addressing economic, social, and environmental factors is crucial for

strengthening resilience and mitigating the impacts of future disasters. Future research should prioritize interdisciplinary, comparative, and longitudinal approaches to provide a robust foundation for adaptive policymaking and effective disaster management.

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Ocena posledic naravnih nesreč na trajnost v podeželskih občinah: Primer Loške doline

Izvleček

Študija preučuje vpliv naravnih nesreč na trajnostni razvoj podeželske občine Loška Dolina, s poudarkom na žledu leta 2014 in kasnejših poplavah. S polstrukturiranimi intervjuji s sedmimi ključnimi deležniki, vključno s predstavniki lokalne oblasti, civilne zaščite in prizadetimi posamezniki, raziskava analizira vpliv nesreč na ekonomski, družbeni in okoljski steber trajnosti. Žled je povzročil škodo na gozdovih in infrastrukturi, medtem ko so poplave povzročile onesnaženje tal in motnje v habitatih. Kljub izzivom je skupnost izkazala odpornost in povečano ozaveščenost o podnebnih spremembah. SWOT analiza izpostavlja tako priložnosti v lesni industriji kot tudi izzive na področju pripravljenosti na nesreče. Študija poudarja potrebo po vključevanju zmanjšanja tveganja nesreč v načrtovanje trajnostnega razvoja.

Ključne besede: Naravne nesreče, trajnostni razvoj, podeželske občine, odpornost, Loška dolina, SWOT analiza

Leveraging Communities of Practice to Cultivate Entrepreneurial Mindset: A Systematic Review and Practical Insights

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Abstract

This paper explores the role of Communities of Practice (CoPs) as a potential teaching tool to better promote an entrepreneurial mindset, particularly in the context of higher education. Through a systematic review of existing learning theories and the concept of CoPs, this paper identifies the challenges of entrepreneurial education and proposes changes in higher education that focus on creating entrepreneurial awareness, enhancing entrepreneurial competencies and developing students' entrepreneurial identity to foster an entrepreneurial mindset by supporting formal higher education with informal educational practices such as CoPs. The originality of this paper lies in the presentation of the alternative concept of Accountable Entrepreneurial Education. By combining theoretical insights with practical examples, this paper serves as a valuable resource for educators, researchers and practitioners in the field of entrepreneurship education.

Introduction

Entrepreneurship is an important driver of economic development, efficiency and competitiveness, it fosters innovation, creates jobs (Shane & Venkataraman, 2000; Amofah & Saladrigues, 2022), promotes social change and a better quality of life and thus contributes to economic growth and sustainability. The EU identifies entrepreneurial competencies as key competencies not only for the world of work but also for everyday life and assigns higher education institutions (HEIs) a key role in developing an entrepreneurial mindset that should be addressed to all students, regardless of their future career path or personal experience (Gibb, 2002). Research has shown that it is possible to develop an entrepreneurial mindset by providing people with the knowledge, skills and attitudes necessary to recognize opportunities, innovate and take calculated risks through entrepreneurial education. Therefore, HEIs have an extremely important role to play in preparing the future generation of entrepreneurs and promoting positive change.

The entrepreneurial mindset is a way of thinking and acting that can be cultivated to encourage innovation and proactive behaviour. It is a set of attitudes, skills and behaviours that enable individuals to identify opportunities, deal with uncertainty, innovate and create value.

To change the entrepreneurial attitudes of Generation Z students and create a more favourable entrepreneurial environment, modern HEIs need to innovate the way they develop an entrepreneurial mindset in their students by introducing alternative teaching and learning strategies and promoting students' competencies through active participation in the learning process (Igwe et al., 2022). Through a systematic review, this paper aims to deepen the understanding of how entrepreneurial education in higher education (HE) can better promote the entrepreneurial mindset through the application of an alternative teaching approach. Using the Situated learning theory (Wenger, 1998), it explores how entrepreneurial education, which includes curricular content, active learning and extra-curricular activities, can influence students' entrepreneurial mindset. This paper has theoretical, policy and practical significance. First, an overview of the theoretical considerations of the entrepreneurial mindset is provided. It then introduces the relevant learning theories and discusses the challenges of entrepreneurial education today. Next, the concept of Communities of practice is discussed, followed by the introduction of the new concept of Accountable Entrepreneurial Education. The chapter ends with conclusions and practical implications.

Theoretical Background

The mindset determines how someone uses and reacts to information (Dweck, 2006). The entrepreneurial mindset is characterized by a combination of attitudes, individual characteristics, beliefs, and behaviours that relate to an entrepreneur and that help individuals find, interpret, evaluate, and pursue innovation opportunities (Korte, 2018). Krueger (2015) has emphasized that the is deeply cognitive and shares common characteristics such as opportunity recognition, risk-taking, creativity and innovation, future orientation, flexibility and adaptability, initiative and self-confidence, critical thinking and problem-solving, communication and collaboration. Key aspects of an entrepreneurial mindset include a willingness to try out new ideas, the ability to think creatively, take calculated risks and step out of one's comfort zone. It also includes proactivity, resilience, self-efficacy, opportunity recognition, resourcefulness, learning orientation and creating value for others,

whether through products, services or solutions. Together, these dimensions form a mindset that focuses on the ability to recognize, act and mobilize resources under uncertain conditions and overcome challenges to succeed in ambiguous and extremely difficult circumstances (Cui et al., 2021; McGrath and MacMillan, 2000; Ireland et al., 2003; Taatila, 2010). In a broader sense, an entrepreneurial mindset is described as an entrepreneurial attitude towards life (Blenker et al., 2012).

Developing an entrepreneurial mindset in HE is important as it prepares students to succeed in a rapidly changing and increasingly complex world, and equips them with the necessary skills and attitudes to succeed in different areas of life, thus contributing to economic and social development and fostering a culture of innovation and continuous improvement (Kruger, 2015). The modern labour market and business environment are constantly evolving, which is why fostering an entrepreneurial mindset in HE is also crucial (Ikonen, 2013). An entrepreneurial mindset helps students to adapt to change and uncertainty, and they learn to see challenges as opportunities and develop creative solutions, which strengthens their resilience in the face of setbacks. An entrepreneurial mindset encourages innovative thinking and leads to the development of new ideas, products and services (McGrath & MacMillan, 2000). Entrepreneurial graduates can contribute to the local and global economy and promote development and innovation in their communities. Developing an entrepreneurial mindset builds confidence in one's ability to achieve goals and overcome obstacles. An entrepreneurial mindset promotes continuous learning and personal growth, which is essential in an ever-changing world. The skills and attitudes that come with an entrepreneurial mindset — such as initiative, critical thinking and resilience — are valuable in all fields, not just business.

Awareness and skills have been found to have a positive impact on the entrepreneurial mindset (Cui et al., 2021). Previous research (Lakshmi & Jayakani, 2024) has also identified five key factors that significantly influence the entrepreneurial mindset: entrepreneurial personality, entrepreneurial attitude, entrepreneurial intention, entrepreneurial career and entrepreneurial education. It is quite difficult to identify all the attributes, skills and knowledge that characterize an entrepreneurial mindset, which makes it extremely difficult to decide how to develop them in formal education and how to assess students' learning and behaviour. Entrepreneurial education at HEIs is under pressure to meet the needs

and expectations of students on the one hand and the demands of the world of work on the other. It is based on the assumption that it is possible to develop an entrepreneurial mindset during education (Hjorth et al., 2015). Fayolle (2009) conceptualizes entrepreneurial education as all activities aimed at developing an entrepreneurial mindset, attitudes and competencies. This encompasses a wide range of areas such as idea generation, business creation, growth and creativity.

Although entrepreneurial education (EE) has been around for more than 60 years worldwide, the question is whether educational initiatives are effective in developing an entrepreneurial mindset and whether they can be embedded in higher education curricula (Florin et al., 2007; Yang, 2016; Loi et al., 2022; Cui et al., 2021), especially because classroom teaching and the real world are so different. Classroom teaching provides a structured, theoretical and controlled environment with guided learning and immediate feedback, using primarily academic resources. In contrast, the real world provides a dynamic, practical and unpredictable environment with self-directed learning, performance-based assessment and multiple interactions and resources. See Table 1 for more details on the differences.

The differences between the classroom and real life can be seen as the main reason for the low effectiveness of EE in HE, and understanding these differences is crucial to bridging the gap between academic learning and practical application and ensuring that the skills and knowledge acquired in HE can be effectively transferred and utilized in real-life contexts.

In HE too much emphasis is placed on classroom learning. This formal education is a structured, sequential and institutional form of education with standardized curricula, formal assessments and recognized qualifications (Gibb, 2007). However, learning is not only the result of formal education, much learning also takes place outside the classroom. This is what is known as informal education and non-formal education. Informal education refers to unstructured, spontaneous learning that takes place in everyday life without formal curricula or assessments, while non-formal education includes semi-structured, organized learning that takes place outside of traditional educational institutions, with flexible curricula and informal assessments. Both informal and non-formal education could complement formal education by providing diverse learning opportunities and fostering lifelong learning skills and attitudes (Melnic & Botez, 2014).

Table 1

Comparison of classroom and real-world settings

	Classroom	**Real-world**
Environment	controlled environment with a predefined curriculum and structured learning activities, lessons follow a set schedule, and outcomes are often predictable	unpredictable environment with dynamic, real-time challenges, learners must adapt to changing circumstances and unexpected situations
Focus	theoretical knowledge, concepts, and principles, opportunities for practical application are simulated or hypothetical	practical, hands-on experiences and applying knowledge to real-life situations, learning involves solving real-world problems and making decisions
Assessment	teachers provide immediate feedback on performance and learning is assessed through standardised tests and exams	success is assessed based on outcomes, performance, and impact in real situations, feedback comes from results, experiences, or supervisors, and can be delayed
Resources	primarily textbooks, lectures, and other academic materials, teachers guide the learning process, providing explanations and answering questions	a wide range of tools, information sources, and real-life experiences, students need to seek out information and learn independently
Interaction	structured through group work and classroom discussions and limited to classmates of similar age and background	a diverse group of people, including colleagues, mentors, and clients, learning through collaboration, teamwork, and exposure to different perspectives

Source: Author's synthesis according to Gibb (2007) and Kolb & Kolb (2009)

Entrepreneurial education should lay the foundation for an entrepreneurial mindset by providing individuals with the necessary tools, experiences and incentives to think and act entrepreneurially, thus raising a new generation of innovative and dynamic leaders (Cui et al., 2021). In modern HEIs, the main objective of entrepreneurial education is to develop entrepreneurial competencies and an entrepreneurial mindset that promotes an entrepreneurial attitude towards life (O'Brien & Cooney, 2016). It is argued that HEIs that create the right environment for an entrepreneurial mindset will be more successful (Green, 2019).

By design and delivery, entrepreneurial education at HEIs inhibits creativity and limits critical thinking and innovation. Faculty rarely consider the input of entrepreneurs and employers (Serdyukov, 2017). Although it is now common for HEIs to collaborate with businesses and public organizations (usually in the form of guest lectures), it is very difficult to incorporate working life into the HE curriculum.

Researchers agree (Gibb, 2002; Fayolle, 2009; Taatila, 2010; Philpott et al., 2011; Blenker et al., 2012; Kruger, 2015; Yang, 2016; Igwe et al., 2022) that the promotion of an entrepreneurial mindset is less likely to be successful if it is only attempted through instruction at HEIs alone. The reason for this could be that students develop their entrepreneurial awareness by acquiring knowledge and skills in the classroom and are then expected to practice entrepreneurial behaviour in a completely different environment. The results fall short of expectations and their self-identity, self-efficacy and motivation suffer. To bridge this gap and ensure that the competencies acquired in the classroom are transferable beyond the classroom, entrepreneurial education should provide students with opportunities to interact with stakeholders and apply entrepreneurial competencies by extending the learning environment beyond the classroom.

Methodology

The study relied on a systematic literature review (SLR) that synthesised research findings from several studies on entrepreneurial education and learning theories, searching multiple databases and using various search terms, with no research in the field. To ensure that the selected studies were consistent with the research objectives, methodologically rigorous and provided a comprehensive overview of the topic under investigation, only studies with a strong conceptual or theoretical basis relevant to the objectives of this paper were considered. These include peer-reviewed journal articles, books and conference proceedings written in English that include quantitative, qualitative and mixed-method studies and directly address the selected keywords. The data from 65 books and journals were analysed in the following steps: searching different sources about what is to be researched, analysing the results obtained from different sources, inclusion and exclusion, and conclusions and explanations (Fundoni et al., 2024). The keywords used in the study were: "Entrepreneurship Education, Entrepreneurial Mindset, Entrepreneurial Education, Higher Education, Learning Theories, Situated Learning Theory, and Communities of Practice". The quality of the included papers was assessed using a standardised instrument, i.e. AMSTAR checklist, which is specifically designed for evaluating the scientific paper quality by assessing its transparency, rigour, and reproducibility.

The Results and Discussion section reviews the literature and integrates the findings to provide answers to the following specific research question: How can entrepreneurial education in higher education better promote an entrepreneurial mindset? The relevant data from the included studies were systematically extracted and the results are summarised here.

Results and Discussion

To find an answer to the research question about the challenges faced by modern entrepreneurial education and to discuss the approaches and innovations in entrepreneurial education to promote entrepreneurial mindset among students, a systematic review of previous literature was conducted.

Introduction to Learning Theories

The following existing learning theories were identified as relevant to the promotion of entrepreneurial mindset: Social cognitive theory (Bandura, 2002), Engagement theory of learning (Kearsley & Shneiderman, 1998), Social identity theory (Hogg, 2016) and Situated learning theory (Wenger 1998). A summary of the relevance of these theories is presented in Table 2.

Table 2

Existing theories and their relevance for entrepreneurial education

Theories	Relevance for promoting students' entrepreneurial mindset
Social cognitive theory	Learning happens through observing, and role models. The importance of personal factors, environment and behaviours for learning (reciprocal determinism) Supportive learning environment. Active engagement in learning. Vicarious learning (through the experience of others). Positive experiences and incremental success to build self-efficacy. Motivation through self-regulation.
By emphasizing learning through observation, self-efficacy, and interaction with one's environment, this approach can help students build the skills, confidence, and resilience needed, reinforcing behaviours and attitudes that form an entrepreneurial mindset.	
Engagement theory of learning	Collaboration as a core component of learning. Relate-Create-Donate Model (collaboration - Relate, project creation - Create, and making meaningful contributions - Donate). Meaningful learning experiences lead to better knowledge retention - Engagement Through Real-World Problem-Solving. Learning is most effective when actively engaged in meaningful, collaborative, and project-based activities. The importance of active participation.
This theory provides a valuable framework for entrepreneurship education by promoting active, collaborative, and meaningful learning experiences, and real-world applications. By aligning with these principles, educational programs can effectively cultivate an entrepreneurial mindset, and prepare students to think innovatively, collaborate effectively, and bring value to real-world situations.	
Social identity theory	Students identify with the groups they belong to, and this influences their behaviours and attitudes. Importance of role models within a social group. Fostering a strong sense of in-group belonging. Identity evolves through active participation in group practices. Learning through positive comparisons, interactions between individuals and social environment. Adapting the norms and behaviours of identity. Social Identity as a driver for risk-taking and innovation. Identifying with a group provides a sense of purpose.
By encouraging students to adopt an entrepreneurial social identity, align with entrepreneurial role models, embrace group norms, and actively participate in entrepreneurial activities, education programs can help students internalize entrepreneurial values, behaviours and attitudes. This approach makes the entrepreneurial mindset not just a set of skills but part of students' identity, which is more enduring and impactful.	
Situated learning theory	Learning through active participation in meaningful Social structure and meaning are continually negotiated through active participation embedded in contexts other than formal education. Learning influences one's identity, as individuals adopt new roles and social identities within a community. Learning involves participation and reification (creating shared representations of knowledge). Learning through social interaction and observation. Learning through legitimate peripheral participation. Educational institutions are not the only locus of learning.
By embedding students in real-world entrepreneurial contexts, encouraging participation in communities of practice, and promoting identity transformation, this theory helps students internalize entrepreneurial skills and attitudes. This theory not only makes learning more relevant and impactful but also encourages a mindset of continuous learning, adaptability, and resilience.	

Source: Author's analysis

Situated Learning Theory (SLT)

The concept of Situated learning theory (SLT), which was developed by Etienne Wenger (1998) (Wenger, 1998), is particularly relevant and will therefore be discussed in more detail. SLT assumes that learning is inherently linked to the situation in which it takes place, that it is most effective in a context that is meaningful and relevant to the learner, and that knowledge is best learned and retained when it is acquired through practical application in the real world rather than through decontextualized information or memorization (Lave & Wenger, 1991). Learning takes place when individuals participate in collective activities and share knowledge and skills. By participating in communities, learners move from a peripheral to a more central role as they gradually

acquire knowledge and skills. Wenger refers to this process as legitimate peripheral participation. Similar to traditional apprenticeship, cognitive apprenticeship is about learning through guided experiences and social interactions in which experts model the behaviours of novices.

Negotiation of meaning (i.e., the process of becoming a particular person in a particular context (Wenger, 1998), as opposed to merely acquiring information or knowledge) and identity are two key components of SLT. The negotiation of meaning involves two enriching concepts: Reification and participation (Farnsworth et al., 2016), where reification refers to the process of giving form to experiences by creating objects, terms, symbols, and concepts that can be shared and recognized within a community and that provide tangible representations of knowledge and practice. Examples of reification include the creation of documents, tools, roles, symbols and rituals that embody the knowledge and practices of a community. Participation, on the other hand, involves active, social involvement in these practices. It encompasses the interactions, activities and relationships through which people learn, contribute and are recognized as members of the community. Participation means contributing to the shared practices and knowledge of the community, which facilitates learning, meaning-making and identity formation.

Members build their identity in three ways: Imagination, Engagement, and Alignment, which work synergistically together. They need to identify with and contribute to the community (Farnsworth et al., 2016). The entrepreneurial mindset is shaped by social identity, as entrepreneurship is essentially a social endeavour that depends on the interactions and beliefs of a diverse ecosystem (Bucholtz & Hall, 2005). An identity encompasses a set of meanings that describe who a person is when they occupy a particular role in society, belong to a particular group, or possess certain characteristics that define them as a unique individual (Burke & Stets, 2022). Identity is made up of three components: a relatively stable set of personality traits, role identity, a set of expectations and behaviours for a particular social position, and social identity, a set of characteristics that define what it means to be part of the group. This last component of identity can change depending on the meaning/characteristics of the group. A person's identity is the result of the interaction between personality and social context.

Communities of practice (CoPs)

It is possible to implement the principles of SLT in HE through organizational structures that combine meaning, membership and participation with a common purpose. These groups, formed around a common interest characterized by a field of interest, a community of members who engage with each other, and a shared practice that develops through collective learning and interaction, are known as Communities of practice (CoPs) (Nordell, 2014). They are characterized by a domain, a community and a practice. The domain refers to the area of interest or topic around which the community revolves and provides a common ground and sense of identity. The community of members is the social structure that facilitates relationships, interaction and learning between members. The practice around which the community organizes its interactions refers to the shared repertoire of resources, experiences, tools, stories, routines, vocabulary and methods.

CoPs have been around as long as humanity, they are everywhere and appear in many different forms, but not all groups and teams are CoPs. It has been shown that (Thompson, 2005) CoPs fulfil certain criteria. There are lasting reciprocal relationships between members, interaction takes place not only within the community but also between the community and the context, members share the way they engage and promote forms of ongoing practice themselves, information flow and innovation develop, a high level of understanding is present, members use specific tools and artefacts, they share local lore, stories and jokes and have mutually defined identities, jargon and abbreviations for communication, distinctive styles and a shared discourse that reflects a particular perspective.

Some examples of CoPs are: Tribes focused on traditional knowledge and practises; groups of doctors, nurses, and health professionals sharing best practices, new treatments, and medical research; teachers and educational administrators discussing pedagogical strategies, curriculum development, and classroom management; student-led organisations focused on interests such as environmentalism or entrepreneurship, where they learn through shared activities and experiences; communities formed around hobbies such as photography or gardening; groups focused on social issues, where members collaborate to address problems

such as poverty, education or health and share strategies and resources, etc. Each CoP has a distinctive profile consisting of characteristics that describe an ideal member. This profile is the main reference point for those who want to join the community (Korte, 2018), and of course, there is a limitation based on willingness to join. Joining a community requires the individual to adopt the norms, beliefs and values of the group (Ashforth & Mael, 1989). Resolving these conflicts is an essential part of forming a new identity and a crucial aspect of developing entrepreneurial behaviour.

Application of Communities of Practice (CoPs) in entrepreneurial education

Situated learning theory underpins much of the discussion in entrepreneurial education literature, as it emphasizes learning in context. CoPs provide a situated learning environment where students can engage in discussions, collaborations, and projects directly relevant to entrepreneurial challenges. This contextual learning fosters a deeper understanding of the entrepreneurial process and enables learners to apply theoretical knowledge to real-life scenarios.

CoPs can influence educational practice in three ways. First, within higher education institutions designing educational experiences that integrate practical application and active participation. Secondly, beyond HEIs by connecting students to real-world practises through engagement with wider communities outside the formal educational environment. And finally, they support lifelong learning by creating communities that focus on topics that continue to engage and interest students after they have completed their formal education. The introduction of CoPs into entrepreneurial education in higher education may have a positive impact on at least some dimensions of entrepreneurial mindset, as previous research (Sedlan Kőnig, 2022) has shown that students who have participated in CoPs during their studies have a higher propensity for entrepreneurial behaviour and better self-efficacy. In entrepreneurial literature, tacit knowledge, i.e. knowledge gained through personal experience, plays a crucial role in entrepreneurial success (see Virtanen, 2014). It is vital for entrepreneurial decision-making but is challenging to transmit through formal education alone. CoPs facilitate the transfer of tacit knowledge that is often not recorded in formal documents. They are dynamic, promote continuous learning and play a critical role in professional development, knowledge sharing and fostering innovation in their field. They also provide opportunities for self-directed learning, which should be

encouraged in entrepreneurial education (Igwe et al., 2022). Students have access to mentors who share their entrepreneurial experiences with them, they learn together in small groups with which they identify.

A person who does not identify as a creator, innovator, risk taker, opportunity seeker, initiator, communicator, organizer, collaborator and problem solver is unlikely to succeed in this role. Entrepreneurial behaviour goes beyond knowledge and action. It also includes the adoption of norms and behaviours associated with the entrepreneurial identity. Developing an entrepreneurial mindset is therefore not just about becoming more innovative, ambitious or risk-taking, it is also about students changing their personal, social and professional self-image (Korte, 2018), which is very difficult to achieve in formal higher education. CoPs can provide an interesting playground for this.

An entrepreneurial mindset can hardly be a product of formal entrepreneurial education. CoPs could support the development of teaching methods at HEIs, provide tools for course redesign, improve the outcomes of entrepreneurial education and promote collaboration between HEIs and society (Nordell, 2014). By introducing CoPs into entrepreneurial education, the ambition to strengthen entrepreneurial competencies could reach beyond the framework of formal higher education and support it dynamically.

CoPs can also play a crucial role in developing an entrepreneurial mindset by providing a collaborative environment where individuals can share knowledge, experiences and best practices as they create a platform for the exchange of explicit and tacit knowledge related to the entrepreneurial way of life. Students can learn from each other's successes and failures and gain practical insights that are often not taught in formal HE. By bringing together people with different perspectives and skills, CoPs foster an environment that encourages creative problem-solving and innovation. This is essential for developing the kind of thinking required for an entrepreneurial mindset.

In addition, social capital theory, often discussed in entrepreneurship literature, highlights the importance of networks and relationships in accessing resources, information, and opportunities (see Julien, 2015). Bourdieu and Coleman argue that social capital is instrumental for entrepreneurs, as it provides access to resources and support systems that are crucial for venture success. CoPs act as networking hubs and thus help build social capital, and networks between members

which provide emotional support, resources and opportunities for trust and collaboration.

Reflection is a key element in entrepreneurial learning. It allows students to evaluate their experiences, learn from them, and apply insights to future challenges, a process critical to developing a strategic and adaptive mindset (Schön, 1993; Kolb & Kolb, 2009). CoPs offer a platform for reflective practice, where members can discuss their experiences, receive feedback, and learn collectively.

Entrepreneurial mindset literature (McGrath & MacMillan, 2000) emphasizes that entrepreneurial behaviour entails dealing with uncertainty and willingness to take calculated risks. By participating in CoPs, students can safely experiment with new ideas and discuss failures, which helps normalize risk-taking and resilience-building. They can develop practical skills that are directly applicable in real life, such as leadership, negotiation, project management and risk assessment skills. CoPs often engage in real-life projects that provide members with hands-on experience. This experiential learning is critical to understanding the complexities of the real business world. In summary, by fostering continuous learning and adaptation, CoPs support an entrepreneurial mindset, promote the practical application of explicit knowledge (Philpott et al., 2011), and provide a supportive environment for adapting to changing conditions and learning from their experiences. Thus, CoPs can complement formal higher education by fulfilling a rather unrealistic task assigned to entrepreneurial education, namely to introduce students to the entrepreneurial way of thinking and prepare them to smoothly transfer the acquired knowledge, skills and attitudes to the real world.

To summarize, CoPs ensure that learning is contextualized and that knowledge, skills and attitudes are acquired through guided experiences and interactions in a meaningful context, fostering entrepreneurial awareness, capacity and identity. The concept of Communities of Practice (CoPs) is linked to entrepreneurial literature and practice as CoPs provide a structured environment where students gain essential skills, develop an entrepreneurial identity, and learn from both peers and mentors in a practical setting. CoPs also emphasize the role of social learning, experiential knowledge, and identity formation, which are critical in fostering entrepreneurial mindsets and behaviours. Therefore, it makes sense to include CoPs in entrepreneurial education at HEIs.

Accountable Entrepreneurial Education (AEE)

In response to the research question and based on the existing theories, and as a means to foster students' entrepreneurial mindset, the proposal for the introduction of the novel approach under the name Accountable Entrepreneurial Education (AEE) is made here. By including CoPs, AEE encompasses formal, informal and non-formal educational practices in entrepreneurial education. CoPs are seen as opportunities to promote an entrepreneurial mindset as they allow to focus on three essential components: Creating awareness and empathy for the entrepreneurial way of life, enhancing entrepreneurial capability and developing students' identity when students are expected to adopt the entrepreneurial mindset and transfer the acquired competences to real life. It considers the entrepreneurial environment, mentors and role models are important to foster the entrepreneurial mindset. By incorporating CoPs, AEE can seamlessly bridge the gap between academic knowledge and its application. Figure 1 shows the complex interplay of components that should be integrated and work together in entrepreneurial education at HEIs and beyond.

Formal higher education faces the challenge of fostering students' entrepreneurial experiences and facilitating adaptive and personalized learning (Igwe et al., 2022) necessary for the development of entrepreneurial competencies. Unfortunately, too often the focus in formal education is on imparting knowledge and not on developing students' entrepreneurial capabilities and identities. It is extremely difficult to allow students to gain direct experience through learning by doing in the classroom due to high student enrolment, limited class time, and teachers using outdated curricula and still relying mainly on traditional teaching and learning methods where teachers pass on knowledge and limit students' creativity, discovery, exploration of possibilities and critical thinking.

Entrepreneurial learning theory (Cope, 2011; Rae, 2005) emphasizes the importance of experiential learning and learning-by-doing in the development of entrepreneurial skills. CoPs provide this type of experiential learning environment, and learning outside the classroom, through CoPs ensures the relevance of knowledge, skills and competencies and provides an alternative and cost-effective solution to these challenges. It is experiential, engages students in various components that promote an entrepreneurial mindset, such as opportunity

recognition, resource mobilization, and risk management, and places them at the centre of education. Self-efficacy, which is defined as a person's belief in their ability to organize and implement actions to achieve desired performance and outcomes (Bandura, 2002), is also promoted through practice, self-directed learning, and social networking (Igwe et al., 2022), which mainly take place outside the classroom, in CoPs.

Figure 1

Accountable Entrepreneurial Education for fostering an entrepreneurial mindset
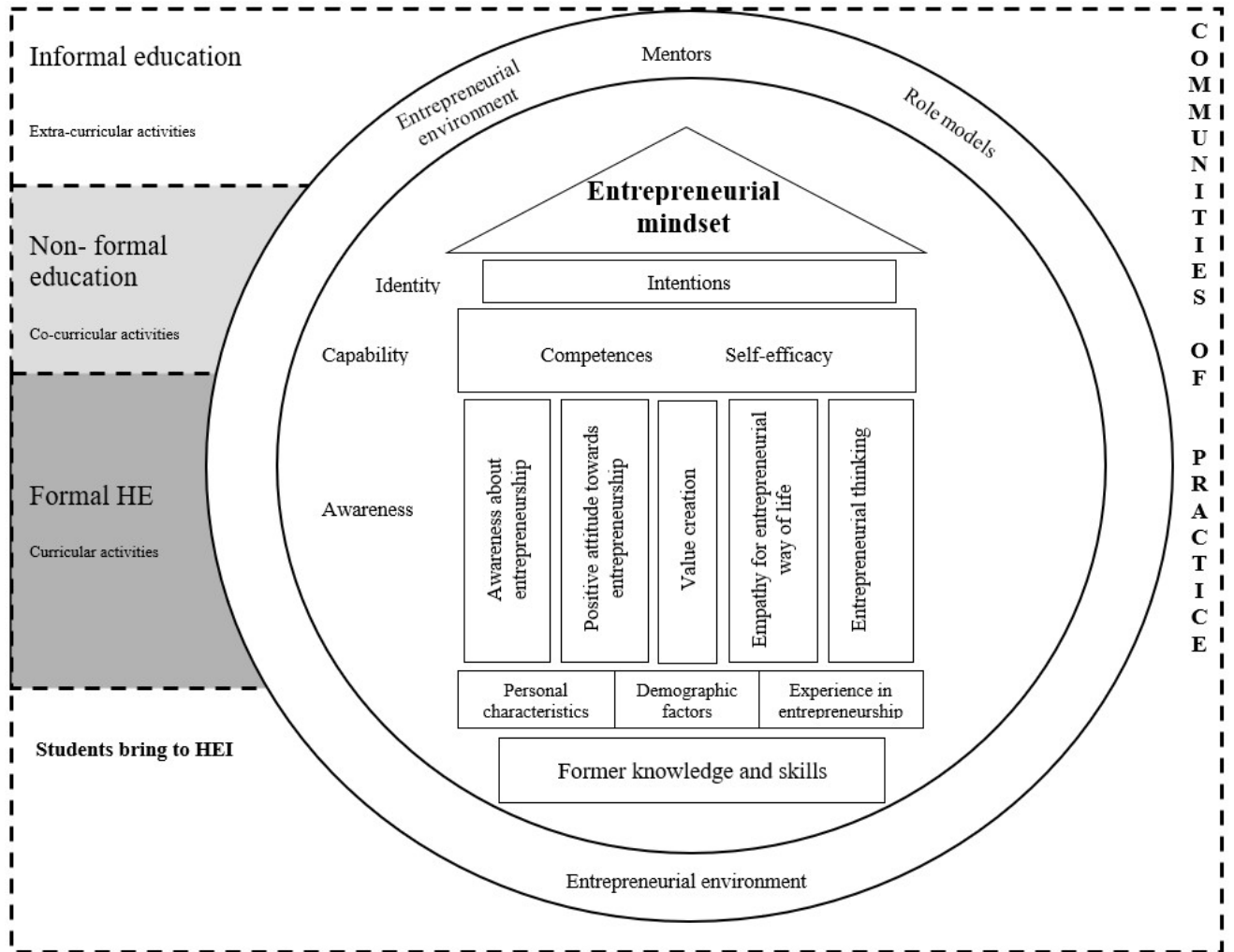
Source: Author

CoPs cannot replace formal higher education. Therefore, AEE provides for the acquisition of knowledge through formal educational practices but also offers students the opportunity to develop entrepreneurial capability and awareness and to explore their entrepreneurial identity. CoPs provide opportunity, support and material for all these aspects.

An alternative way to promote an entrepreneurial mindset is through CoPs. They help educators to think differently about formal education. Farnsworth et al. (2016) emphasize that if identity formation is an important part of all learning, educators cannot impart knowledge to students without introducing them to the identity for which this knowledge is important. The curriculum provides knowledge, while CoPs provide the opportunity for practice, competence, and 'knowability'. There is a big difference between assuming an identity (he is an entrepreneur) and living out that identity (he behaves entrepreneurially). This cannot be achieved in the classroom and through formal curricula.

As mentioned earlier, identity is formed through imagination, commitment and adaptation, and all three forms are necessary to negotiate meaning. This suggests that if HEIs are to promote an entrepreneurial mindset, they need to provide opportunities, materials and so that all three processes can work synergistically. HEIs focus

predominantly on the technical dimensions of learning, detached from practice and identity. In HE, a conformist focus on curriculum requirements (the knowing) prevails, and there are few opportunities for personal engagement (the doing) and identity formation (the being). Identity should be considered as an organizing principle in the design of Accountable entrepreneurial education (Farnsworth et al., 2016), with a focus on designing relevant and meaningful learning contexts that promote identity negotiation.

In terms of the duality of reification and participation, AEE bridges the gap between academic knowledge and working life and the possibilities of bridging this gap. Academic knowledge can be categorized as reification and CoPs can be seen as forms of participation that support the negotiation of the meaning of knowledge acquired in higher education. By introducing CoPs into formal higher education, the two processes would complement each other in the negotiation of meaning.

Examples of CoPs for students in higher education and beyond include Innovation and entrepreneurship clubs and societies, internships, community projects, service learning, volunteer groups, small business consulting activities, research clubs, study groups, student organizations, (student) mentoring programs, creative arts groups, sports and recreation clubs, and more. Although they vary in form and focus, they can all enhance learning, promote personal development and prepare students for career success through collaboration and shared experiences. These examples share some common characteristics. All are forms of social, and collective learning, are student-led, involve experiential learning, and cooperative learning, promote reflective practice, and take place in a supportive environment. They embrace the way entrepreneurs learn, i.e. the so-called "learning-as-you-go" process, through mistakes, crises and as a result of emotional distress.

These activities promote mutual engagement, a shared repertoire and joint efforts through problem-solving, joint exploration of ideas, trust and respect. The most important driver of innovation and change is the entrepreneurial mindset of teachers. The so-called educational entrepreneurs (Brown & Cornwall, 2000) are individuals or organizations that create and implement innovative solutions to improve education and share a common goal: to improve education through innovation, leadership, and a relentless focus on positive student outcomes. They are characterized by creativity, vision, strategic planning, courage, passion for education and openness to feedback, among other qualities. They

discover innovation to bring about change by developing learning outcomes that explicitly relate to the entrepreneurial mindset.

As the systematic review has shown that focusing on the development of students' entrepreneurial identity could ensure better effectiveness of entrepreneurial education, it is crucial that efforts are made in AEE to shape this identity and this is feasible through the negotiation of meaning, i.e. reification and participation that materialize in the CoPs.

Conclusion

This paper presented new evidence on fostering an entrepreneurial mindset by introducing the novel concept of Accountable Entrepreneurial Education which proposes Communities of practice as an alternative teaching tool in higher education that enables the development of students' entrepreneurial identity, awareness and skills to embrace entrepreneurial mindset by providing relevant and meaningful contexts for the acquisition and application of relevant knowledge, skills and attitudes.

Accountable Entrepreneurial Education focuses not only on entrepreneurial personality, attitude and intention but also on entrepreneurial awareness, entrepreneurial capability and identity, fostering empathy for an entrepreneurial lifestyle and promoting an entrepreneurial mindset. AEE is a novel approach because it includes identity as an organizing principle in the design of higher education and because it incorporates informal and non-formal practices such as CoPs.

The information and views presented here can assist educators and practitioners, as well as administrators and program managers, in creating sustainable educational programs and fostering an entrepreneurial mindset among students. Implementing CoPs and AEE can significantly enrich entrepreneurial education by creating a more integrated, practical, and identity-focused learning environment in HEIs. The shift, however, requires a comprehensive approach involving curriculum changes, faculty development, institutional support, and policy adjustments to effectively foster an entrepreneurial mindset.

The fact that this study relies on a systematic review of existing literature may limit generalizability across different educational contexts or cultural backgrounds. Furthermore, the theoretical focus does not address practical barriers to implementing CoPs in formal HE,

which limits the potential for practical application. In addition, this paper being subject to length restrictions, did not examine the (long-term) impact of CoPs on entrepreneurial mindset. Conducting empirical studies that compare CoP-based entrepreneurial education with traditional methods could provide data on the effectiveness of CoPs. Furthermore, future studies could track students post-graduation to assess the impact of CoP-based entrepreneurial education on their career paths, entrepreneurial achievements, and adaptability in the workforce. Also, research could explore hybrid educational models that combine CoP-driven informal learning with formal curriculum elements. This can deepen understanding of CoPs as an educational tool and help bridge the gap between theoretical constructs and practical application in the development of entrepreneurial mindset.

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Uporaba delovnih skupnosti za spodbujanje podjetniške miselnosti: Sistematični pregled in praktična spoznanja

Izvleček

Ta članek raziskuje vlogo delovnih skupnosti (angl. Communities of Practice - CoP) kot potencialnega učnega orodja za boljše spodbujanje podjetniške miselnosti, zlasti v okviru visokošolskega izobraževanja. S sistematičnim pregledom obstoječih teorij učenja in koncepta CoP opredeljuje izzive podjetniškega izobraževanja in predlaga spremembe v visokošolskem izobraževanju, ki se osredotočajo na ustvarjanje podjetniške zavesti, krepitev podjetniških kompetenc in razvijanje podjetniške identitete študentov za spodbujanje podjetniške miselnosti s podporo formalnega visokošolskega izobraževanja z neformalnimi izobraževalnimi praksami, kot so CoP. Izvirnost tega prispevka je v predstavitvi alternativnega koncepta odgovornega podjetniškega izobraževanja. Z združevanjem teoretičnih spoznanj s praktičnimi primeri ta članek služi kot dragocen vir za izobraževanje, raziskovanje in prakso na področju podjetniškega izobraževanja.

Ključne besede: učni pripomoček, podjetniško vedenje, visokošolsko izobraževanje, inovativna praksa