THE NEXUS BETWEEN EMPLOYEE HAPPINESS AND COMPANY PERFORMANCE

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Abstract

This article examines the relationship between worker satisfaction and business profitability, particularly emphasizing the pandemic era. It offers a fresh viewpoint on how a person's happiness may be critical in developing a business. The empirical study focuses on approximately 12,343 companies operating in various sectors, for which financial data for the reference period 2013-2022 were collected from the ORBIS platform. Quantile regression and panel smooth transition regression models were used as estimation methodologies. The findings have shown that employee satisfaction generally has a detrimental impact on a company's profitability, with a significantly more evident effect on companies with very low ROA and ROE indicators. Furthermore, it has been demonstrated that, although the influence is less pronounced in absolute terms, the relationship between happiness and profitability within successful enterprises becomes increasingly positive. Additionally, the COVID-19 pandemic has brought about notable changes in the dynamics between these two variables, revealing that a rise in employee happiness during the pandemic contributed to increased profitability in companies with lower productivity. Conversely, it resulted in a decline in profitability for firms exhibiting exceptionally high ROA or ROE indicators.

Keywords: happiness index, profitability, quantile regression, panel smooth transition regression

JEL Classification: C31, C33, I310, O16

1. Introduction

Recent global changes, such as the COVID-19 pandemic, have highlighted that transitioning to more flexible work arrangements can increase productivity and affect employees' emotional well-being.

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Many workers have reported feeling alone and isolated because of the low number of face-to-face connections. Put differently, a lack of socializing has resulted in a lower level of work satisfaction, which in turn has affected productivity. This research will help us understand the potential effects of employee happiness on overall business performance and develop and implement human resource management strategies that advance the company's goals and the welfare of its stakeholders. As a time when employee well-being and satisfaction rank among companies' top priorities, it is imperative to investigate how happiness indices impact company performance to understand and improve the balance between individual prosperity and organizational success.

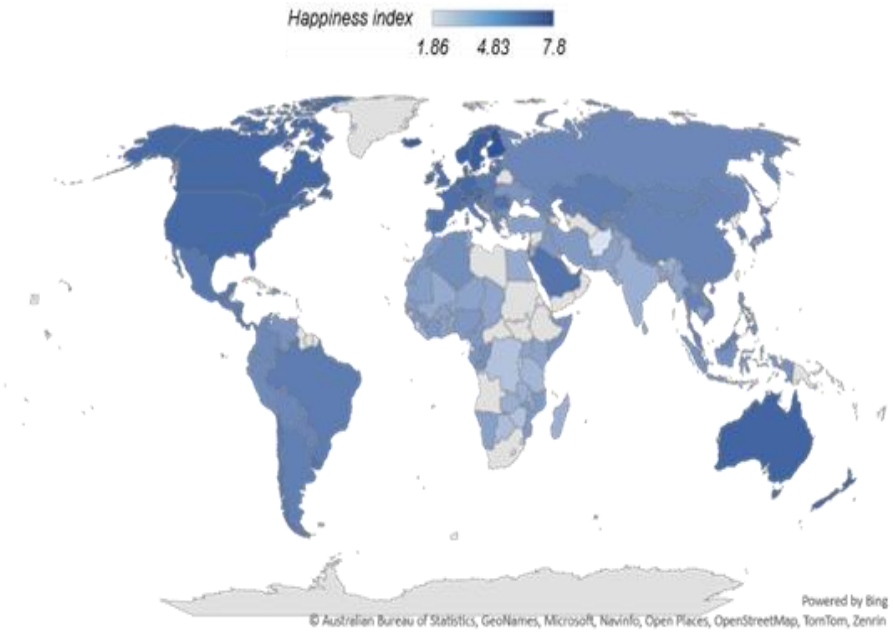
The happiness index may assess the level of happiness and well-being in a given country. Scholars such as Ram (2017), Helliwell (2018), Sachs (2018), Greco (2019), and Trofallis (2019) contend that this index is based on a wide range of factors, including GDP, social assistance, energy, productivity, economics, technology, environment, energy, health, social issues, education, real estate, transportation, politics, law, government, low levels of corruption, and the freedom to make decisions in daily life.

The happiness index is included in a more thorough happiness assessment as part of *the global happiness report.* These national rankings were developed using data from a survey in which participants were asked to rate the quality of their current life on a scale of 0 to 10. While happiness is perceived and experienced uniquely by each individual, the happiness index aims to provide an overview of community well-being, helping companies and organizations develop policies and programs to improve citizens' quality of life. Based on data collected from Gallup surveys, the **World Happiness Report (2023)** ranked the happiest countries in the world using six critical criteria: GDP per capita, social support, life expectancy, freedom of choice, generosity, and perception of corruption.

Figure 1 highlights the global happiness index levels for 2022, which can be correlated with the data from Figure 2. At the top of the rankings are Finland (7.82), Denmark (7.64), Iceland (7.56), Switzerland (7.51), and the Netherlands (7.42). Factors such as social support, trust among citizens, a strong sense of decision-making freedom, and the absence of government corruption are some primary reasons Finland is a clear leader. Afghanistan (2.40), Lebanon (2.96), and Zimbabwe (3.00) are at the opposite extreme of the range.

Figure 1

Global Happiness Index Level in 2022

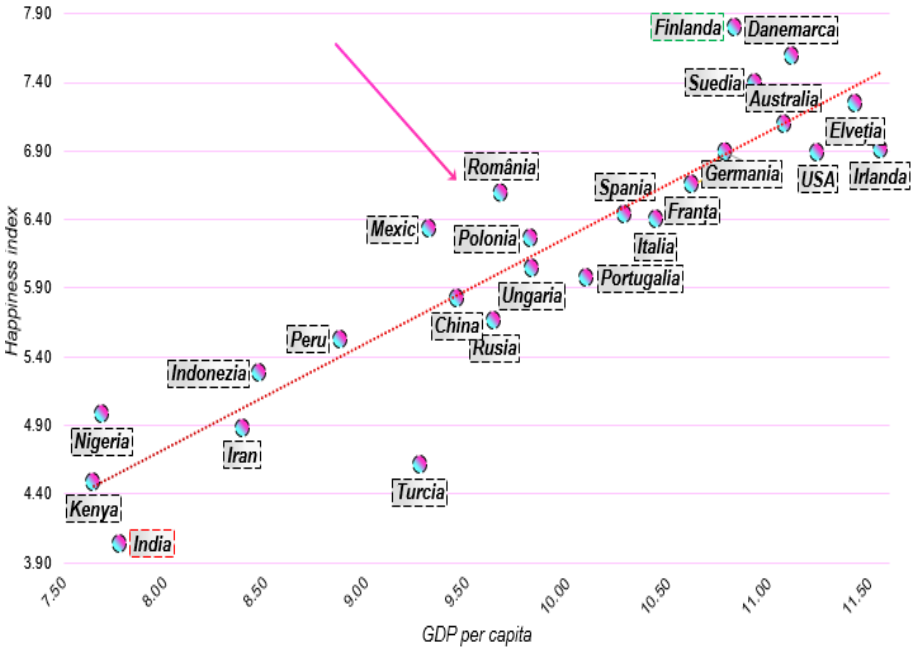


Source: own processing

Policies that optimize corporate performance may also be implemented by identifying and analysing various criteria. Furthermore, by examining the connection between economic circumstances, well-being, financial security, mental health, and workers' capacity to satisfy their fundamental wants and aspirations, the relationship between financial success and the happiness index may also be measured. Having a lot of money makes it possible for people to participate in leisure and travel activities, contemporary healthcare facilities, and high-quality education programs, all of which contribute to happiness.

Figure 2

Happiness Index Ranking in 2022 – Top 25 countries

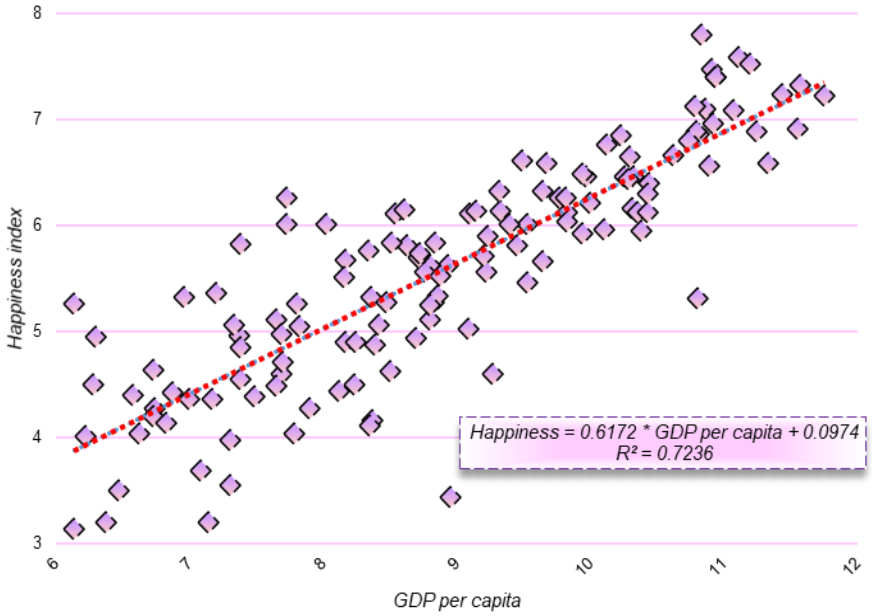


Source: own processing in excel

As seen in Figure 3, it seems that there may not always be a significant association between GDP per capita and the happiness index - a phenomenon connected to *the Easterlin Paradox.* Once a certain income level and material comfort have been achieved, the boost in happiness becomes increasingly marginal. However, it can still be influenced by various factors: political, environmental, social equity, job satisfaction, easy access to healthcare and education, and community cohesion. For the regression model presented in *Figure 3,* we used 2022 as the reference period, based on a sample of 131 countries, which were divided into three categories: countries with *high, medium, and low* GDP per capita. The coefficient of determination (R^2) is 0.7236, indicating that the model explains 72.36% of the variation in the happiness index.

Figure 3

The Happiness-Wealth Relationship Worldwide in 2022



Source: own processing

2. Current state of knowledge and research hypotheses

This paper is among the first to address such a topic. Unfortunately, the absence of studies that specifically identify the impact of the happiness index on company performance makes it difficult to establish a clear economic theory on this subject. However, this gap allows the research to bring a high degree of originality. Moreover, the present work can make a significant and contemporary contribution to the corporate finance literature, mainly due to its novel approach. In 2006, Ovaska and Takashima observed that governments primarily use GDP as the leading indicator to quantify the happiness index based on national welfare and growth.

The paradox stems from the disparity between gross domestic product (GDP) and individual income, resulting in a divergence between personal earnings and the degree of happiness attained. Lyard (2015) posits an inverse link: GDP might rise, but per capita income decreases. Diener, Tay, and Oishi (2013) contend that

personal wealth is a crucial determinant of happiness and well-being. This study expands on these divergent viewpoints, seeking to investigate the relationship between happiness, money, and business performance while enhancing the discussion on the broader ramifications of well-being in the corporate context.

Graham and Ruiz (2017) used quantile regressions to demonstrate that persons experiencing happiness are more likely to reside in advantageous and supportive situations, correlating with elevated levels of well-being.

The absence of well-being is often associated with various adverse factors, including poor healthcare systems, high poverty rates, a lack of security, and inadequate compensation for work, both at the individual and aggregate levels. Grimes and Wesselbaum (2019) reinforced two years later that income is almost vital to happiness. They underlined that people might migrate to nations with thriving economies to live a better level of life. This enhances their general well-being and pleasure by enabling them to satisfy their particular aspirations and necessities.

These findings demonstrate the complex link between economic situations, income, and happiness, emphasizing the need to consider systemic and individual factors when evaluating well-being and company success.

Ovaska and Takashima (2006) state that interpersonal connections, economic and political freedom, health, education, and wealth distribution are also reflected in the happiness index's components. Ten years later, Musikanski and Polley (2016) confirmed that various factors, including social relationships, political and economic freedom, health, and education, affect how well a company operates in other countries. Oswald, Proto, and Sgroi (2015) further demonstrate that work productivity is significantly impacted by enjoyment using a step-by-step experimental design with two samples of 270 and 180 unique individuals. Both groups' levels of happiness and productivity at work were shown to be directly and favorably associated, indicating that growing financial resources raise living standards, which in turn reflect financial success. These findings demonstrate the intricate connection between happiness and both organizational performance and individual well-being, showing how productivity and well-being are related and ultimately affect financial outcomes.

In his research, Popa (2018) demonstrates that a happy and creative employee adds significant value to the company they work for. Moreover, if the company provides a supportive environment for personal development, increased productivity is both guaranteed and achieved. This relationship directly stimulates the company's performance. Zhu et al. (2023) contend that a greater intensity of employee happiness correlates with increased stability of the executive team, as a company's worth, assessed via financial success, mediates the link between happiness and executive team stability.

Another perspective comes from Kaplanski et al. (2015), who, in their study, suggest that happier employees have higher expectations for the company's future returns.

Based on the reviewed literature, the following hypotheses regarding the impact of happiness on company profitability are proposed:

H_1: Employee happiness, measured through the happiness index, has a statistically significant influence on company profitability;

H_2: The COVID-19 pandemic has altered the way employee happiness contributes to the financial performance of companies;

H_3: The impact of employee happiness (quantified using the happiness index) on company profitability varies depending on the profitability level of the companies.

3. Methodology

3.1. Description of the database and variables

In this paper, we aim to study the impact of the happiness index on company performance. Furthermore, economic profitability (ROA) and financial profitability (ROE) are the ratios that will be used to *„monitor"* the financial performance dimension. Vintilă (2010) asserts that profitability ratios are derived from comparing components linked by a *„cause-and-effect relationship."*

To accomplish this objective, we have chosen a sample of 12,343 enterprises from 58 countries engaged in diverse industries, with the reference period from 2013 to 2022. All companies are publicly traded, which was critical for picking the sample during the examined

period. The geographical reach of these companies transcends a single continent. The data was obtained using the ORBIS platform.

Table 1 outlines the variables used in the research, along with their classifications and computation methodologies. The winsorizing technique was implemented on all variables at the 99% level due to detecting abnormalities within each variable. The firms' sizes were logarithmically transformed (LN_TA) to eliminate scale discrepancies. Logarithmization mitigates the skewness and unpredictability of these variables, aligning them more closely with a normal distribution. Conversely, it mitigates the impact of outliers, which may otherwise skew the analytical findings and their interpretation.

Table 1

Data description

Abbreviation	Variable name	Calculation method	Period
		Dependent variables	
Profitability variables			
ROA	Economic profitability rate	Net profit / Total assets The economic profitability rate measures the efficiency of capital allocation in fixed and current assets, showing the percentage of profit a company earns in relation to its total resources.	2013-2022
ROE	Financial profitability rate	Net profit / Total equity The financial profitability rate is defined as the rate by which investors can assess whether their investment is profitable. The company generates additional value for shareholders if the ROE is higher than the cost of equity.	2013-2022
		Explanatory variables regarding the characteristics of the company	
Control variable at the company level			
LN_TA	Company size	Natural logarithm of total assets Assets reflect the sum of resources controlled by the enterprise as a result of past events, expected to generate future economic benefits.	2013-2022
TA	Tangible assets	Tangible fixed assets / Total assets It provides insight into the structure of a company's assets and indicates how much of the total assets consist of fixed tangible assets.	2013-2022
CASH_STI	Cash and short-term investments	Cash and short-term investments / Total assets It measures a company's ability to meet short-term obligations using its liquid resources, such as cash and short-term investments.	2013-2022
Debt Variables			
TL	Total liabilities	Total liabilities / Total assets This indicator provides information about a company's debt level and can be used to assess financial risk.	2013-2022
LTL_TA	Ratio of long-term liabilities to total assets	Long-term liabilities / Total assets This ratio assesses whether a business has enough funding to meet its debt obligations or the amount of money it can use to finance new products or services and secure new loans or other financial assets.	2013-2022
ITE_TA	Ratio of income tax expenses to total assets	Income tax expenses / Total assets This indicator provides insight into a company's fiscal efficiency and can highlight its tax level in relation to the size of its total assets.	2013-2022

Abbreviation	Variable name	Calculation method	Period
Variables related to research and development expenses			
RD	Research and development expenses	Research and development expenses Expenses are associated with activities undertaken by a company to discover new ideas or technologies and to develop or improve existing products, processes, or services. These expenses include both financial and human resources allocated to innovation and maintaining or improving a company's competitiveness in the market.	2013-2022
Macroeconomic variables			
EC_GROWTH	Economic growth	Economic growth Refers to the long-term increase in the production of goods and services within an economy. It is a measure of a country's expanding economic capacity and generally reflects an improvement in living standards, employment opportunities, and infrastructure development.	2013-2022
INFL	Inflation rate	Inflation rate The ratio between excess or surplus money (or demand) and the real supply of goods and services in the economy, which corresponds to a certain rise in prices.	2013-2022
Happiness index variable			
HAPPINESS	Happiness index	Country scores are based on a survey in which respondents evaluate their current quality of life on a scale from 0 to 10. This index is designed to reflect subjective aspects of life and well-being, in contrast to traditional development measures such as gross domestic product (GDP), which focuses on economic aspects.	2013-2022
Interaction Variable			
HAPPINESS*COVID	Interaction between the happiness index and COVID 19	COVID 19*HAPPINESS	2013-2022
Dummy variable			
COVID	COVID 19	COVID: 1 if the year analysed is 2020/2021, otherwise 0	2013-2022

Source: own processing

3.2. Presentation of empirical methods

The empirical analysis model will take the following form:

$$Profitability = \alpha + \beta_k \cdot X_{it} + \delta_1 \cdot COVID + \delta_2 \cdot HI + \delta_3 \cdot COVID \cdot HI + \varepsilon_{it} \quad (1)$$

Where:

$X =$ matrix of order k containing the control variables;

$k =$ number of control variables, with $k = 1, 2, \ldots, 10$;

$i =$ the number of companies;

$t =$ the moment in time expressed in years (period 2013-2022);

$\alpha =$ the intercept term;

$\beta_k =$ the coefficients of the control variables;

$\varepsilon =$ the error term, which captures the effect of other factors not considered in the model.

3.3. Descriptive statistics and correlation matrix analysis

Descriptive statistics are presented in Table 2. The 12,343 companies are analysed over the period 2013-2022, resulting in 123,430 observations for each variable included in Table 1. *The economic profitability ratio (ROA)* fluctuates between -2.7829 and 0.4157, with an average value of -0.0126, meaning that, on average, companies experience a loss of 1.26% relative to all their resources. Meanwhile, the financial profitability ratio (ROE) ranges from -3.3375 to 2.1257, with an average of 1.51%, indicating that companies generate a 1.51% profit relative to their resources. *The happiness index (HAPPINESS)* has a mean value of 6.1688, reflecting the average score of the current quality of life of the population. The standard deviation indicates, on average, how much values deviate from the central trend. For ROA, according to the first quartile, 25% of observations are less than or equal to 0.0030. In contrast, the second quartile (median) shows that 50% of observations are less than or equal to 0.0316. Similarly, the third quartile (Q_{75}) indicates that 75% of observations are less than or equal to 0.0650.

Table 2

Descriptive statistics

Variables	*Mean*	*Median*	*Max*	*Min*	*Standard deviation*	*Q25*	*Q50*	*Q75*
ROA	-0.0126	0.0316	0.4157	-2.7829	0.2774	0.0030	0.0316	0.0650
ROE	0.0151	0.0666	2.1257	-3.3375	0.4944	0.0092	0.0666	0.1309
LN_TA	12.7694	12.8504	20.3025	4.7137	2.3785	11.2478	12.8504	14.3632
TA	0.2575	0.2075	0.9109	0.0000	0.2242	0.0693	0.2075	0.3884
CASH_STI	0.1819	0.1289	0.9088	0.0006	0.1790	0.0550	0.1289	0.2462
TL	0.4784	0.4679	2.5805	0.0000	0.2857	0.2918	0.4679	0.6286
LTL_TA	0.1269	0.0794	0.6682	0.0000	0.1478	0.0028	0.0794	0.1929
ITE_TA	0.1850	0.2054	1.5868	-1.3810	0.3169	0.0340	0.2054	0.3110
RD	0.0151	0.0000	0.2722	0.0000	0.0403	0.0000	0.0000	0.0120
EC_GROWTH	2.5545	2.2400	24.3700	-14.6000	3.0848	1.1100	2.2400	4.4000
INFL	2.4634	1.6000	72.3000	-2.3000	4.3337	0.5000	1,6000	2.6000
COVID	0.2000	0.0000	1.0000	0.0000	0.4000	0.0000	0.0000	0.0000
HAPPINESS	6.1688	6.0250	2.5385	4.4986	0.8074	5.5000	6.0250	3.4851

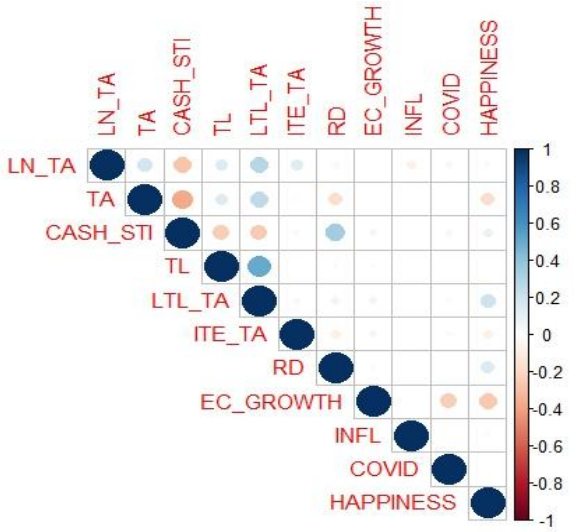
Source: own processing based on data obtained from the ORBIS platform. The description of the variables is presented in Table 1

Prior to estimating the regression model, we generated the correlation matrix for the explanatory variables using *RStudio* program to examine the correlation coefficients among the variables. The correlation matrix serves a twofold function: it assesses the presence of multicollinearity and enables the examination of the correlation levels among the variables in the investigation.

Figure 4 illustrates the correlation coefficients among the variables used in the model. A robust link exists between the Long-term Debt to Total Assets Ratio (LTL_TA) and Total Debt (TL). A comparable scenario is seen between the variables CASH_STI and TA, which exhibit a negative correlation coefficient. In other words, given the high level of correlation between the variables mentioned earlier, distinct regressions will be created to avoid including highly correlated variables in the same equation. This method mitigates the impact of multicollinearity on the efficiency and reliability of the estimators.

Figure 4

Correlation matrix

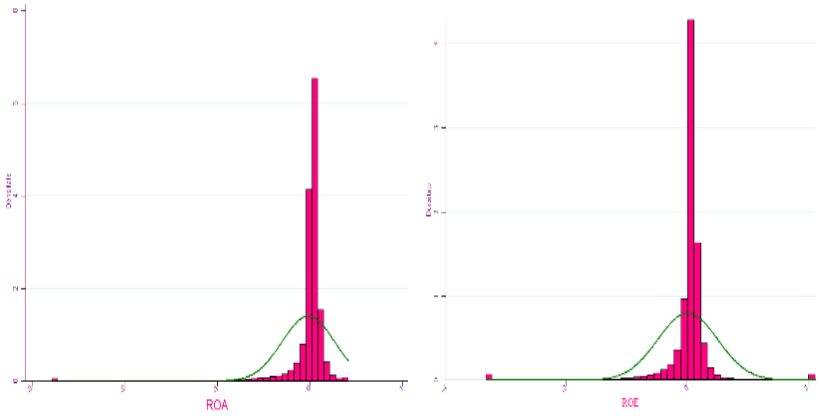


Source: own processing in RStudio based on data obtained from the ORBIS platform. The description of the variables is presented in Table 1

Figure 5 contains histograms of the two profitability measures, ROA and ROE. The histograms are shown independently according to many factors: the characteristics of the assets used by the enterprises in the sample, their level of indebtedness, operational efficiency, capital structure, financing strategy, and dividend distribution policy. In both instances, the data exhibit non-normal distribution, thereby compromising the precision of estimates produced by fixed-effect and random-effect models. Consequently, quantile regression is used.

Figure 5

Histograms of the ROA and ROE variables



Source: own processing in Stata$_{14}$, based on data retrieved from the ORBIS platform

4. Results of the quantitative study

In this section, the results obtained from data analysis using the software $Stata_{14}$ and MATLAB are presented.

4.1. Results of the quantile regression models

Table 3 summarizes the quantile regression estimates concerning the effect of the Happiness Index on economic profitability. At Q_{10}, the value is -0.1062, whereas the other quantiles exhibit positive values: Q_{25} is 0.0030, Q_{50} is 0.0316, Q_{75} is 0.0650, and Q_{90} is 0.1130. The variables COVID, HAPPINESS, and the interaction term HAPPINESS*COVID were included concurrently. Notably, the variables COVID, HAPPINESS, and HAPPINESS*COVID were included simultaneously. On one hand, Q_{10} and Q_{50} recorded the largest impact coefficients, explaining 26.69% and 13.98% of the variation in financial profitability, respectively. On the other hand, Q_{90} shows the lowest determination coefficient at 0.0576.

According to Q_{10}, Q_{25}, Q_{50}, and Q_{75}, the $COVID_{19}$ pandemic has had negative effects on ROA, which can be correlated with the fact that the epidemiological shock caused significant disruptions in global economic activity, particularly in vulnerable companies. Given the extensive sample, the HoReCa sector was particularly affected by the drastically reduced or almost non-existent demand, leading to a decrease in the economic profitability rate. Additional costs related to

safety, health, and security measures to prevent the spread of the virus and ensure optimal business operations must also be considered. In the long term, the severity of this phenomenon created difficulties in recovery and re-establishing a pre-$COVID_{19}$ profitability equilibrium. However, in terms of economic profitability, happiness has a positive impact in Q_{75} and Q_{90}. People who experience a sense of happiness may be more motivated and productive at work; in other words, well-being can influence the level of commitment and performance in professional activities. Moreover, positive social relationships, both in personal life and at the workplace, can be correlated with the happiness index. A team that fosters positive social relations is likely to generate better financial performance. A happier individual is more likely to be creative, innovative, and less inclined to miss work or leave their job, thereby reducing training costs for new employees. Additionally, the interaction variable HAPPINESS_COVID positively influences ROA in Q_{10}, Q_{25}, and Q_{75}. Companies that capitalized on market conditions during the health crisis became key points for investors due to their high performance. This is particularly important as efficient risk management and strategic handling of impacts experienced less volatility and enjoyed stable internal performance.

Table 3

Results of quantile regression models on the impact of the happiness index on ROA

Variables	Q10	Q25	Q50	Q75	Q90
Constant	-0.0267**	-0.0320**	-0.0484***	-0.0525**	-0.0652*
	[0.0086]	[0.0041]	[0.0026]	[0.0031]	[0.0027]
LN_TA	0.0428***	0.0216***	0.0097***	0.0050***	0.0020***
	[0.0008]	[0.0003]	[0.0001]	[0.0001]	[0.0002]
TA	0.0058***	0.0047***	-0.0015**	-0.0047***	-0.0009***
	[0.0030]	[0.0011]	[0.0010]	[0.0010]	[0.0023]
CASH_STI	-0.5216*	-0.1753**	-0.0193	0.0392**	0.1120*
	[0.0211]	[0.0075]	[0.0023]	[0.0019]	[0.0041]
TL	-0.3097*	-0.1186*	-0.0584*	-0.0612*	-0.0529**
	[0.0119]	[0.0037]	[0.0015]	[0.0023]	[0.0032]
LTL_TA	-0.3092***	-0.0606***	-0.0382***	-0.0304***	-0.0399***
	[0.0107]	[0.0050]	[0.0015]	[0.0018]	[0.0030]
ITE_TA	0.0751***	0.0426***	0.0197***	0.0058***	-0.0242***
	[0.0029]	[0.0018]	[0.0009]	[0.0015]	[0.0027]
RD	-1.8044	-1.4991**	-1.7170*	-1.4978*	-1.4990*
	[0.0478]	[0.0361]	[0.0658]	[0.0600]	[0.0590]

Variables	Q10	Q25	Q50	Q75	Q90
EC_GROWTH	-0.0025***	-0.0012***	0.0001***	0.0012***	0.0024***
	[0.0003]	[0.0001]	[0.0008]	[0.0008]	[0.0001]
INFL	-0.0016***	-0.0220***	0.1364***	0.3743***	0.7595***
	[0.0329]	[0.0182]	[0.0121]	[0.0183]	[0.0390]
COVID	-0.1194***	-0.0256***	-0.0063***	-0.0035***	0.0109***
	[0.0183]	[0.0071]	[0.0050]	[0.0005]	[0.0089]
HAPPINESS	-0.0734**	-0.0305**	-0.0030**	0.0101**	0.0222**
	[0.0015]	[0.0007]	[0.0005]	[0.0004]	[0.0006]
HAPPINESS_COVID	0.0198**	0.0031**	-0.0484**	0.0004**	-0.0012**
	[0.0086]	[0.0041]	[0.0026]	[0.0031]	[0.0014]
Pseudo R-square	0.2669	0.1140	0.1398	0.1381	0.0576

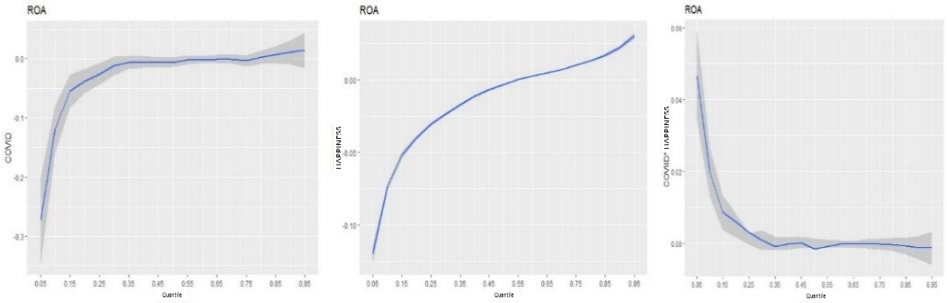
*Source: own calculations based on data from the ORBIS platform. The description of the variables is presented in Table 1. Standard errors are shown in parentheses; *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Figure 6 illustrates a positive and stable trend regarding the two models with explanatory variables COVID and HAPPINESS. However, the interaction variable shows a sharp decline in Q_{15}, after which it maintains a stable trend. During the pandemic, consumer behaviour and market expectations underwent significant changes. Strategies that effectively responded to these developments saw an improvement in financial performance. The political reaction and economic policies significantly influenced profitability. Government measures, including fiscal stimulus or corporate assistance, may sustain ROA or aid in the return to a pre-$COVID_{19}$ equilibrium level.

At the same time, the *„corona-crisis"* accelerated the adoption of digital technologies and transformed the way many companies conduct business. Companies that successfully adopted and adapted to these changes, invested in innovation, and optimized their operations for the digital environment benefited from increased efficiency and financial performance. Conversely, the INTERACTION variable saw a notable loss in economic activity as a result of lockdowns and limitations, which caused a deterioration in firm financial performance, presumably seen by a decrease in ROA. As the immediate impacts of the shock are absorbed or alleviated, it is probable that ROA will somewhat rebound. This could explain why, after the initial decline, ROA remains stable.

Figure 6

Results of the quantile regression models – extended model, with ROA as the dependent variable



Source: own calculations in RStudio based on data from the ORBIS platform. The description of the variables is presented in Table 1

Table 4 summarizes the key estimates of the quantile regression models regarding the impact of the happiness index on financial profitability. At Q_{10}, the value is negative, -0.1893, while the remaining quantiles have positive values: Q_{25} is 0.0092, Q_{50} is 0.0666, Q_{75} records a value of 0.1309, and Q_{90} is 0.2347. Naturally, the variables COVID, HAPPINESS, and HAPPINESS*COVID were incorporated simultaneously. Furthermore, Q_{10} and Q_{50} explain 18.85% and 12.87% of the variation in financial profitability, respectively. On the other hand, Q_{75} records the lowest coefficient of determination at 0.0436.

Table 4

Results of quantile regression models on the impact of the happiness index on ROE

Variables	Q_{10}	Q_{25}	Q_{50}	Q_{75}	Q_{90}
Constant	-0.1305**	-0.1041**	-0.1678***	-0.2156**	-0.2144*
	[0.0230]	[0.0079]	[0.0051]	[0.0068]	[0.0096]
LN_TA	0.0689***	0.0303***	0.0146***	0.0065***	-0.0055***
	[0.0010]	[0.0004]	[0.0001]	[0.0002]	[0.0005]
TA	-0.0064*	-0.0011**	-0.0044**	-0.0070*	0.0024**
	[0.0085]	[0.0031]	[0.0017]	[0.0024]	[0.0035]
CASH_STI	-0.6339	-0.1969*	0.0029	0.1039*	0.2313
	[0.0186]	[0.0080]	[0.0043]	[0.0053]	[0.0080]
TL	-0.4491*	-0.0605*	0.0819*	0.2116*	0.4750**
	[0.0143]	[0.0054]	[0.0018]	[0.0055]	[0.0136]
LTL_TA	-0.3005***	-0.1839***	-0.1154**	-0.1228***	-0.1993*

Variables	Q_{10}	Q_{25}	Q_{50}	Q_{75}	Q_{90}
	[0.0288]	[0.0091]	[0.0049]	[0.0088]	[0.0189]
ITE_TA	0.1496**	0.0657**	0.0297**	-0.0214*	-0.1058**
	[0.0055]	[0.0030]	[0.0021]	[0.0055]	[0.0063]
RD	-1.7039	-1.4391**	-1.7123*	-1.4228*	-1.4310*
	[0.0348]	[0.0349]	[0.0238]	[0.0590]	[0.0601]
EC_GROWTH	-0.0021***	-0.0011***	0.0008***	0.0027***	0.0046***
	[0.0006]	[0.0002]	[0.0001]	[0.0002]	[0.0003]
INFL	-0.3241***	-0.0937***	0.3165***	0.8292***	0.5156***
	[0.0763]	[0.0330]	[0.0298]	[0.0370]	[0.0562]
COVID	-0.1481***	-0.0197***	0.0037***	0.0032***	0.0306***
	[0.0432]	[0.0151]	[0.0099]	[0.0108]	[0.0191]
HAPPINESS	-0.1072**	-0.0385**	0.0008***	0.0239*	0.0438*
	[0.0036]	[0.0012]	[0.0006]	[0.0007]	[0.0012]
HAPPINESS_COVID	0.02261***	0.0011**	-0.0016***	-0.0003***	-0.0035**
	[0.0074]	[0.0026]	[0.0016]	[0.0018]	[0.0033]
Pseudo R-square	0.1885	0.0754	0.1287	0.0436	0.1130

*Source: own calculations based on data from the ORBIS platform. The description of the variables is presented in Table 1. Standard errors are shown in parentheses; *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

Companies that adopted digitalization via investments in technical advances to enhance their online presence, establish e-commerce, and streamline digital operations demonstrate the favorable effect of $COVID_{19}$ on ROE in Q_{50}, Q_{75}, and Q_{90}. Moreover, firms that promptly recognized and addressed customer preferences succeeded in sustaining or enhancing profitability, especially those that catered to health-related needs. Certain industries, including technology, healthcare, and consumer products, were inherently favored by the alterations resulting from the pandemic shock. Consequently, firms in these sectors might be recognized in the higher quantiles of ROE owing to heightened demand and effective adaptability to the novel market circumstances.

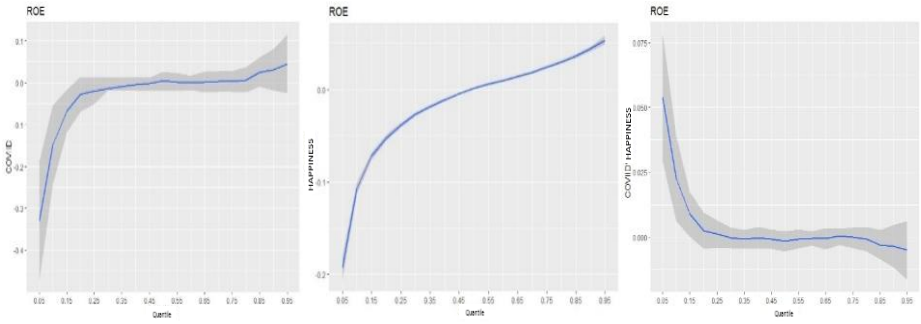
Financial profitability has a negative effect only in Q_{10} and Q_{25}, indicating that the happiness index has a negative influence on ROE. It is highly likely that individuals in these quantiles experience financial pressure, translating into a feeling of financial stress. The absence of happiness may lead to a sense of insecurity and financial uncertainty, which can impact decision-making processes and financial strategies, ultimately affecting performance. Moreover, employees in the lower quantiles may suffer from low motivation and self-esteem, hindering the growth of financial profitability.

Additionally, the interaction variable, HAPPINESS_COVID, negatively influences ROE in Q_{50}, Q_{75}, and Q_{90}. Companies that were heavily dependent on exports and global supply chains felt the impact of disruptions in international trade more acutely. At the macroeconomic level, exchange rate fluctuations, inflation rates, and monetary policy could all affect business performance. Changes in the business environment exacerbate the effects of economic dynamics, and the adverse opinion of investors about firms' prospects during the pandemic resulted in a decline in ROE.

Figure 7 reflects a situation similar to the one observed with ROA.

Figure 7

Results of the quantile regression models – extended model, with ROE as the dependent variable



Source: own calculations in RStudio based on data from the ORBIS platform. The description of the variables is presented in Table 1

In the extended model, where the dependent variable is the return on equity, there is a positive trend in the two models that have COVID and HAPPINESS as explanatory variables. However, on the opposite side, the interaction variable shows a sharp decline in Q20, followed by a stable trend thereafter. The explanation relates to the initial period of COVID19, where the drop in happiness levels among the population was exacerbated by the negative impact on quality of life. This led to an initial decline in ROE, as consumers and investors became more cautious or reduced spending and investments in the face of widespread uncertainty. As the pandemic progressed, company management adapted to the new conditions, setting a stable course. This allowed companies to develop strategies to cope with environmental changes and adjust their businesses to the new

economic demands, since during crises and significant shifts, companies can demonstrate resilience, innovate, or thrive under the new circumstances. This could potentially offset the initial negative effects and contribute to stabilizing or even improving performance despite the pandemic's initial adverse impact. Moreover, some effects of the epidemiological crisis, as well as those related to happiness levels, might not be immediately visible. These could also have delayed effects on profitability.

4.2. Results of the panel smooth transition regression models

This section seeks to experimentally examine the impact of the happiness index on corporate performance within the framework of the shadow economy. To accomplish this objective, I identified companies from the ORBIS platform representing the 27 nations (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden), spanning the years 2013 to 2022.

Compared to the previous sections, the data regarding the shadow economy were estimated by **Schneider (2022)**. Therefore, we aim to examine the existence of threshold effects between happiness levels and performance variables. Additionally, since the relationship between these variables indicated the presence of nonlinearities, we will employ the panel smooth transition regression (PSTR) model to evaluate the short-term impact.

4.2.1. The examination of linearity

An essential step in estimating panel smooth transition regression models is to test for the presence of a possible nonlinear link within the empirical models. I performed three linearity tests using MATLAB software to examine the presence of a regime-switching effect.

Table 5 summarizes the results and p-values. We thus reject the null hypothesis at a 10% significance level (H_0: r = 0), accepting the alternative (H_1: r = 1). Furthermore, it is observed that a transition function is much more suitable for highlighting the nonlinear effect of the performance generated by the shadow economy, compared to other specifications (r ≥ 2).

Table 5

Linearity and no remaining heterogeneity tests

Test	H0: r=0 vs. H1: r=1	H0: r=0 vs. r=2
Lagrange Multiplier – Wald (LMW)	19.1010 (0.0590)	8.9150 (0.6300)
Lagrange Multiplier – Fischer (LMF)	1.6160 (0.0970)	0.6340 (0.7980)
Likelihood Ratio	19.9810 (0.0460)	9.1010 (0.6130)

p-values are shown in parentheses

Source: own calculations based on data from the ORBIS platform.

4.2.2. The estimation of parameters in the PSTR model

Starting from the premise that the shadow economy could impact profitability levels, we expect our companies to be more profitable in countries where the shadow economy is lower. Thus, if I identify a transition variable, I add the function F, which is a logistic function (taking a maximum value of 1) that depends on the transition variable and identifies a threshold (from which the shape of the transition function shifts from convex to concave). In other words, the shadow economy intersects with the transition function exactly at the threshold of 11.72%.

The shadow economy acts as a threshold variable because in certain countries, the level of the shadow economy can be closely tied to regulations or fiscal policies. When the level of fiscal regulation reaches a certain point, a significant portion of economic activities may shift to the underground sector to avoid taxes and other fiscal obligations. Additionally, in regime 1, the value of F is equal to 0, while in regime 2, the value of F is equal to 1. Naturally, between regime 1 and regime 2, the value of F ranges between 0 and 1.

In Table 6, the parameter estimates from the PSTR model, with economic profitability as the dependent variable, are presented. It is worth noting that the shadow economy does not directly impact profitability. Instead, it moderates the relationship between HAPPINESS and PROFITABILITY in a differentiated manner, with two regimes being identified. In regime 1, which includes countries with a high level of tax collection and, consequently, a low shadow economy, we observe a positive relationship between HAPPINESS and PERFORMANCE. This implies that when the shadow economy is more

excellent than 11.72%, a one-percentage-point increase in HAPPINESS leads to average profitability during the pandemic. The relationship changes in the second regime, comprised of countries with a low level of tax collection and a high shadow economy. In regime 2, a one-percentage-point increase in HAPPINESS negatively impacts PERFORMANCE during the pandemic, reducing it by 0.0044 percentage points.

Furthermore, the probability of the F-Statistic test (Prob(F-statistic) = 0.0000 < 0,01) is significant at a 1% statistical significance level, confirming the econometric validity of the model presented in Table 6. Regarding the coefficient of determination, the model explains 13.14% of the variation in economic profitability.

Table 6

Results of panel smooth transition regression (PSTR) models with ROA as the dependent variable

Variables	Regime 1: β_0	Nonlinear part: β_1	Regime 2: $\beta_0 + \beta_1$	Change in Regime 2 vs. Regime 1
LN_TA	0.0687*** (0.0000)	0.0020 (0.3487)	0.0708**	↑
TA	-0.1960*** (0.0000)	-0.1689** (0.0015)	-0.3650**	↑
CASH_STI	0.0507 (0.3860)	0.0696 (0.2269)	0.1204	-
TL	-0.0491 (0.2499)	0.1235* (0.0062)	0.0743*	↑
LTL_TA	-0.7982*** (0.0000)	0.1267 (0.3823)	-0.6715***	↑
ITE_TA	0.0074 (0.1325)	0.0028 (0.6810)	0.0102	-
RD	-0.0520* (0.1320)	0.0148* (0.4905)	-0.0372*	-
COVID	0.0040 (0.7270)	0.0036 (0.4422)	0.0077	-
HAPPINESS	-0.9123** (0.0018)	0.8822** (0.0137)	-0.0301**	↑
HAPPINESS*COVID	0.1457** (0.0020)	-0.1413** (0.0145)	0.0044**	↑
Threshold		11.72		
Slope(y)		16.3619		
Prob>F-statistic		0.0000		
R-Square		0.1314		
Observations		11,160		

*Source: own calculations based on data from the ORBIS platform. The description of the variables is presented in Table 1. Standard errors are shown in parentheses; *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

In the case of the second PSTR model, the shadow economy intersects with the transition function at a threshold of 14.30%. The shadow economy acts as a threshold variable because, in some countries, the level of the shadow economy can be closely linked to fiscal regulations and policies. When the level of fiscal regulation reaches a certain threshold, a significant portion of economic activities may shift to the informal sector to avoid taxes or other fiscal obligations.

It is worth noting that Table 7 presents the parameter estimates of the panel smooth transition regression model, which has financial profitability as the dependent variable.

Table 7

Results of panel smooth transition regression (PSTR) models with ROE as the dependent variable

Variables	Regime 1: β_0	Nonlinear part: β_1	Regime 2: $\beta_0 + \beta_1$	Change in Regime 2 vs. Regime 1
LN_TA	0.1012***	-0.0549*	0.0463**	↑
	(0.0000)	(0.0500)		
TA	-0.2473*	0.4017**	0.1544**	↑
	(0.0600)	(0.0200)		
CASH_STI	0.0806	0.3246	0.4053	-
	(0.4100)	(0.1500)		
TL	-0.0620	-0.2705*	-0.3325*	-
	(0.6800)	(0.3300)		
LTL_TA	-1.6146***	3.0618*	1.4472**	↑
	(0.0000)	(0.0700)		
ITE_TA	0.0554**	-0.0055	0.0499	-
	(0.0499)	(0.8600)		
RD	-0.2469*	0.0538*	-0.1931*	-
	(0.0100)	(0.7600)		
COVID	-0.0288	0.0395	0.0107	-
	(0.3600)	(0.4300)		
HAPPINESS	-2.6143***	2.2324*	-0.3819**	↑
	(0.0100)	(0.0600)		
HAPPINESS*COVID	0.4199***	-0.3548*	0.0651**	↑
	(0.0100)	(0.0700)		
Threshold			14.3099	
Slope(y)			1.7842	
Prob>F-statistic			0.0000	
R-Square			0.1356	
Observations			11,160	

*Source: own calculations based on data from the ORBIS platform. The description of the variables is presented in Table 1. Standard errors are shown in parentheses; *, **, *** denote statistical significance at 10%, 5% and 1% level, respectively.*

There is no doubt that the shadow economy does not directly impact but rather moderates the relationship between HAPPINESS and PROFITABILITY in a differentiated way, with two regimes being identified. In *regime 1*, countries with a high tax collection rate tend to have a lower shadow economy. Here, we observe a positive relationship between HAPPINESS and PERFORMANCE, meaning that when the shadow economy is greater than 14.3099%, a 1 percentage point increase in HAPPINESS leads to an average profitability during the pandemic period. In *regime 2*, countries with a low tax collection rate have a high shadow economy. Thus, in regime 2, a 1 percentage point increase in HAPPINESS negatively affects PERFORMANCE during the pandemic period by 0.0651 percentage points.

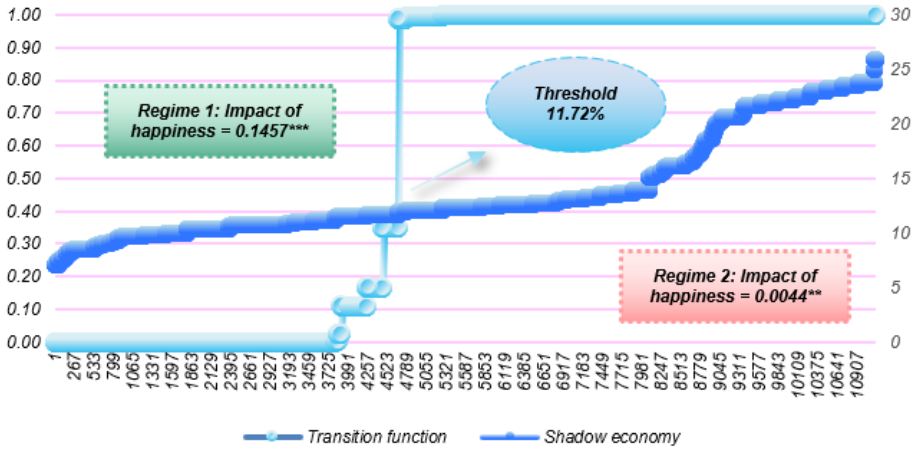
Additionally, the probability of the F-Statistic test is significant at a 1% confidence level, confirming the econometric validity of the model. As for the coefficient of determination, the model explains 13.56% of the variation in financial profitability.

4.2.3. The estimated transition function at the level of the shadow economy

Figure 8 demonstrates that an increase in the underground economy correlates with a reduction in the happiness index impact, which falls from 0.1457 to 0.0044. The observation is associated with the acknowledgment of values. Throughout the pandemic, organizations that re-evaluated their values and priorities to improve employee satisfaction experienced notable employee engagement, which in turn led to enhanced profitability. Organizations that prioritized employee and community welfare and implemented suitable actions typically observed enhanced reputations and improved relationships with business partners and customers. Strong relationships can enhance revenue and contribute to long-term profitability.

The transition function's slope in the case of ROA exhibits a significant steepness and abruptness, attaining a value of 16.3619. A smooth transition is not observed due to the large value and the angle approaching 90°. This indicates significant and rapid changes in the relationship between the underground economy, happiness levels, and economic profitability. Additionally, ROA may demonstrate increased sensitivity to risks associated with the underground economy and happiness levels, as it includes all assets of a company, encompassing those that are risky or volatile.

Figure 8
Estimated transition function for the shadow economy with ROA as the dependent variable



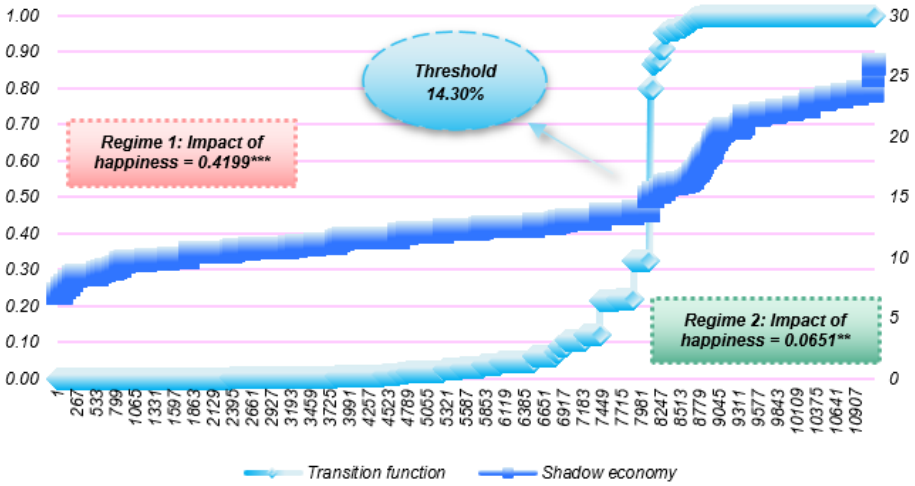
Source: own calculations based on data from the ORBIS platform

The influence of the happiness index on the dependent variable ROE during the $COVID_{19}$ pandemic is significant only in countries with a low underground economy. Figure 9 indicates that as the underground economy rises, the effect on happiness diminishes from 0.4199 to 0.0651. This finding may be attributed to the correlation with economic stability, as nations exhibiting a diminished underground economy generally demonstrate enhanced economic stability. Additionally, public and private institutions in these countries may be viewed as exhibiting greater transparency and efficiency.

In nations with a diminished underground economy, the regulation and oversight of illicit economic activities are generally more effective. This promotes a stable and secure business environment, thereby encouraging greater consumer engagement and investment in legally recognized enterprises.

Given that the slope equals 1.7842, a smoother transition occurs when the dependent variable is ROE. This indicates that the relationship between the underground economy, happiness levels, and financial profitability is more gradual and less abrupt. As a result, the factors influencing return on equity are less sensitive to sudden changes in the underground economy or happiness levels, and their effects on ROE unfold over a longer period and in a more subtle manner.

Figure 9
Estimated transition function for the shadow economy with ROE as the dependent variable



Source: own calculations based on data from the ORBIS platform

Based on the results of the smooth transition regression models applied to panel data, this research could highlight the significance of a healthy and resilient economic environment that supports corporate performance. Internally, policies and measures aimed at facilitating investments in mental health and employee well-being, as well as promoting a stable and predictable climate, could be considered. This is why understanding the impact of happiness on company performance may have implications for both the analysis and evaluation of fiscal policies.

4.3. From employee happiness to company profitability? A new perspective on the literature

The research makes a significant contribution to the corporate finance literature by validating three fundamental hypotheses:

$\mathbf{H_1}$: Employee happiness, as measured by the happiness index, has a statistically significant impact on company profitability;

$\mathbf{H_2}$: The COVID-19 pandemic has altered the way employee happiness contributes to the financial performance of companies;

H_3: The impact of employee happiness (quantified using the happiness index) on company profitability varies based on the profitability levels of the companies.

Additionally, the research highlights the relationship between employee happiness and company performance, illustrating how individual well-being impacts organizational success in both stable economic conditions and during crises.

5. Conclusions

Recent global changes, including the $COVID_{19}$ pandemic, have underscored the transition to more flexible work models. While these models can improve workforce productivity, they may also adversely affect employees' emotional well-being. This paper analyzes the relationship between employee happiness and corporate performance, particularly during the pandemic period, highlighting the significant impact of individual happiness on a company's development. The pandemic demonstrated a positive correlation between population happiness and financial performance. Low employee happiness can result in reduced engagement and productivity. Employees experiencing a lack of support, feelings of overwhelm, or anxiety stemming from pandemic-related stress may exhibit decreased efficiency in task completion. The recent **Deloitte Global Human Capital Trends (2024)** study indicates that 54% of employees worldwide express concern regarding increasing workplace stress levels.

The asymmetric effects on the distribution of company profitability would not have been discovered without performing a quantile analysis. The impact of happiness on profitability is negative at the Q_{50}. However, we observe that happiness has a positive effect on profitability for companies reporting losses. This can be explained by the fact that happy employees are more likely to provide creative and innovative solutions to the challenges faced by the company. Regarding the results obtained through linear regression on panel data, we highlight the existence of a smoother transition for ROE compared to ROA. Additionally, the threshold for regime change concerning the share of the shadow economy in GDP is 11.72% for ROA and 14.30% for ROE. Below this threshold, countries with low tax collection rates tend to have a higher shadow economy, while those above the threshold confirm the existence of a lower shadow economy

along with higher collection rates. Notably, we identified the countries in *regime 1:* Austria, Germany, Denmark, Finland, France, the Netherlands, Estonia, Latvia, Lithuania, Ireland, and Luxembourg. Similarly, we identified those in *regime 2:* Bulgaria, Belgium, Croatia, Cyprus, Czechia, Greece, Malta, Romania, Slovakia, Slovenia, Spain, Hungary, Italy, Poland, Portugal, and Sweden.

The results obtained have significant implications for company management, and therefore, policies and practices related to employee well-being should be reconsidered. Future research should concentrate on a particular industry, develop happiness measurement techniques to provide a more accurate picture of business profitability, and investigate other pertinent variables. Putting these suggestions into practice may help advance the field of study and provide managers of businesses with useful advice on how to maximize organizational well-being and profitability. Additionally, analyzing these aspects introduces a novel element in the economic field. Thus, this research makes a significant contribution to the corporate finance literature, paying particular attention to the impact of the happiness index on company profitability and the presence or absence of asymmetry in the distribution of their profitability.

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