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# Economic Shocks and Their Impact on Corporate Financial Indicators: Empirical Analysis in Hungary

## SUMMARY

The study examines the impact of different economic shocks on corporate financial indicators. It uses a dataset of 4396 observations to assess the strength and significance of the relationship between different economic shocks and key financial indicators such as liquidity, solvency and profitability. The analysis reveals that recessionary exogenous shocks are the most common and are significantly associated with a number of financial indicators. The results suggest that while most financial indicators show weak correlations with economic shocks, some, such as ROA and wage levels, show medium sensitivity. These insights can help firms in strategic planning and risk management during economic downturns.

## INTRODUCTION

Economic shocks, whether they are the result of recessions, epidemics or geopolitical events, can have a profound impact on the financial health of companies. It is important to understand how these shocks affect key financial indicators so that companies can develop effective strategies for resilience and sustainability. This paper aims to explore the links between different economic shocks and corporate financial indicators. By analysing 4,396 cases, we aim to identify patterns and the strength of the relationships, providing useful insights for financial planning and management.

The impact of economic shocks on financial indicators is broad and manifests itself to different degrees in different sectors and regions. A number of studies have examined this relationship, which can help to understand how different types of economic shocks affect corporate financial performance and other economic indicators. Government Decree 37/2011 (22.III.) reinforces the criteria of the EU Regulation in the framework of domestic regulation. Accordingly, a company is considered to be in difficulty if its equity capital is negative, if it is subject to bankruptcy proceedings or if its losses have reached or exceeded 50% of its registered capital.

## THEORETICAL BACKGROUND

Recessionary exogenous shocks are the most common and have a significant impact on most financial indicators, such as liquidity and export orientation. Such shocks often cause widespread economic downturns that affect firms' operations and financial stability (Kashiwagi et al., 2021; Angulo et al., 2018). Although less frequent, positive hysteresis can have a significant impact on return on assets (ROA), indicating that some firms are able to im-

prove their performance despite economic downturns (Margalit, 2019). The economic shocks caused by the COVID-19 epidemic had a particularly significant impact on global economies, resulting in significant revenue losses and rising healthcare costs. These effects were particularly pronounced in financial indicators and in the resilience of firms (Katper et al., n.d.; Dzigbede & Pathak, 2020). The relationship between economic shocks and financial indicators is often weak, but some indicators, such as ROA and wage levels, show medium sensitivity. This is particularly relevant for corporate strategic planning and risk management, as these indicators can help identify firms' financial resilience and adaptability during economic downturns (Giroud & Mueller, 2019; Bruneckienė et al., 2018). The impact of economic shocks may differ across regions and sectors. For example, regions with sectoral structure and geographical advantages show smaller growth declines after economic downturns, indicating their resilience and better performance after the crisis (Angulo et al., 2018; Martin & Gardiner, 2019). The COVID-19 epidemic caused a significant economic shock in Hungary, in particular through its impact on the co-movements between the BUX stock index and other stock markets in Central Europe. During events such as those in 2020 and 2022, co-movements between stock markets increased, indicating that markets reacted more strongly to global shocks (Dias et al., 2023).

Global financial crises, including the COVID-19 epidemic, significantly increased stock market volatility and amplified cointegration patterns between stock indices in CEE and other global markets. This provides evidence that financial markets become more closely interconnected in times of economic shocks (Vladoi & Merling, 2022).

External economic shocks, in particular from the euro area and the United States, have had a significant negative impact on Hungary's economic growth. Based on the GVAR model for the period 2005-2020, these external shocks have led to a significant economic downturn in Hungary (Necula et al., 2022). Getting the financial sector functioning properly is critical for sustainable economic growth. The exploration of the dynamic relationship between credit and economic growth in Hungary, the Czech Republic, Romania and Poland has shown that preserving financial stability is essential for long-term growth (Altăr et al., 2021). The impact of economic policy uncertainty on stock market returns and risk in Hungary and other CEE countries has been significant, especially in 2020, when economic policy uncertainty increased market volatility (Škrinjarić & Orlović, 2020).

## MATERIAL AND METHODS

The study is based on the model of Martin (2011), which consists of two main parts: the first part presents a possible theo-

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retical framework for the study of regional economic resilience, while the second part applies this framework to the empirical analysis of British regions.

The main findings on patterns are:

- The paper distinguishes between ,engineering' resilience (i.e. the system's resistance to shocks and its ability to return to an equilibrium state), ,ecological' resilience (i.e. the system's ability to withstand shocks and return to a new steady state) and ,adaptive' resilience (i.e. the system's ability to adapt and reorganise in response to shocks);
- The concept of hysteresis describes how a recessionary shock can have a lasting impact on the economic trajectory of a region, altering its growth trend;

- The study provides an empirical analysis of the resilience of UK regions during the 2008-2010 recession, showing that some regions were able to emerge from the recession faster and more successfully, while others were on a persistently lower growth path. Accordingly, patterns were identified.

The main concepts of the study have been translated into the indicators that determine the operation of the company. Table 1: Characteristics of the patterns identified

In the table given, each column indicates the change in economic periods, where a value of 0 indicates a decrease and a value of 1 indicates an increase. The columns represent the change in the first period (C1Year), the change in the second period (C2Year), and the change in the war period (War1year).

Each row describes a situation with a unique identifying CODEE (CODEE) and Type (Type).

The table includes the following situations:

**1. Recessionary exogenous shock:** The first and second periods show a decline, while the war period shows an increase. Its identifying CODEE is 1.

**2. Positive hysteresis:** there is a decline in the first period and an increase in the second and war period. Its identifying CODEE is 2.

**3. Decline:** all periods show a decline. CODEE for this identifier is 3.

**4. Decline since Covid:** growth in the first period, decline in the second and war period. Its identifying CODEE is 4.

**5. Sustained prosperity:** growth is seen in all periods. The CODEE for this identifier is 5.

**6. Temporary decline:** an increase in the first period, a decline in the second period and an increase in the war period. Its CODEE identifier is 6.

**7. Transition bounce:** a decline in the first period, an increase in the second period and a decline in the war period. Its CODEE identifier is 7.

**8. Purely wartime effects:** an increase in the first and second periods, a decrease in the war-time period. Its identifying CODEE is 8.

This table describes different economic situations, which can include periods of growth and decline, as well as different types of shocks, including war.

The sample was taken from the Orbis database and included 4396 companies in Hungary that filed annual reports and submitted complete reports between 2019 and 2022.

The research uses a chi-square test to assess the relationships between economic shock variables and financial indicators. The strength of these relationships is measured using Phi and Cramer V statistics. The dataset contains variables representing different economic shocks (e.g., recessionary exogenous shocks, positive hysteresis, COVID-19 induced downturns) and financial indicators (e.g., liquidity, export orientation, solvency, ROA, material cost ratio, labour cost ratio, COGS ratio, revenue/total assets ratio, and wage level).

**1. Table 1: Presentation of the samples tested**

If the value of the variable is 0, then it decreases, 1 in that case it increases	C1.Year	C2.Year	War1.year	CODEE	Type
	0	0	1	1	Recessionary exogenous shock
	0	1	1	2	Positive hysteresis
	0	0	0	3	Decline
	1	0	0	4	Covid since decline
	1	1	1	5	Lasting prosperity
	1	0	1	6	Temporary setback
	0	1	0	7	Going through bounce
	1	1	0	8	Purely war effects

Source: own research based on the logic of Martin (2012)

**2. Table 1: Variables under study and their description**

Variable	Description
V1SRCODE	Revenue growth by type of resilience
V2ISRCODE	Inflation-adjusted revenue growth type of resilience
V3EBIDTARCODE	EBITDA growth by resilience type
V4IEBITDACODEE	Inflation-adjusted EBITDA growth by type of resilience
V5VACODEE	Added value increase in resilience type
V6IVACODEE	Inflation-adjusted value added growth type of resilience
V7LCODEE	Type of change in headcount resilience
LR	Liquidity adequacy
EXP	Export orientation
SOL	Solvency adequacy
ROA	ROA compliance
MCpS	Material cost to sales ratio below/above 50%
COEpS	Rental cost to turnover ratio below/above 50%
COGSpS	Turnover ratio below/above 50%
SpTA	Turnover of assets total ratio above 1
SAL	Adequacy of wage levels

Source: own research

3. Table 1: Cross-tabulation analysis between target variables

Variables	Pears on Chi-Square	d f	Significance	Cramer's V	Strengt h of connection	Most common category
V1SRCODE * V2ISRCODE	11067,3	42	0	0,65	Strong	Recessionary exogenous shock (1389)
V1SRCODE * V3EBIDTARCODE	935,914	42	0	0,19	Medium	Recessionary exogenous shock (554)
V1SRCODE * V4IEBITDACODE	852,615	42	0	0,18	Medium	Recessionary exogenous shock (477)
V1SRCODE * V5VACODEE	1782,215	42	0	0,26	Strong	Recessionary exogenous shock (902)
V1SRCODE * V6IVACODEE	1670,067	42	0	0,25	Strong	Recessionary exogenous shock (729)
V1SRCODE * V7LCODEE	391,639	42	0	0,12	Weak	Recessionary exogenous shock (481)
V2ISRCODE * V3EBIDTARCODE	1227,527	49	0	0,20	Medium	Recessionary exogenous shock (465)
V2ISRCODE * V4IEBITDACODE	1173,632	49	0	0,20	Medium	Recessionary exogenous shock (405)
V2ISRCODE * V5VACODEE	2134,426	49	0	0,27	Strong	Recessionary exogenous shock (741)
V2ISRCODE * V6IVACODEE	2276,341	49	0	0,27	Strong	Recessionary exogenous shock (620)
V2ISRCODE * V7LCODE	578,718	49	0	0,14	Weak	Recessionary exogenous shock (408)
V3EBIDTARCODE * V4IEBITDACODE	22328,9	49	0	0,85	Strong	Recessionary exogenous shock (823)
V3EBIDTARCODE * V5VACODEE	4414,891	49	0	0,38	Strong	Recessionary exogenous shock (701)
V3EBIDTARCODE * V6IVACODEE	5125,988	49	0	0,41	Strong	Recessionary exogenous shock (627)
V3EBIDTARCODE * V7LCODEE	132,098	49	0	0,07	Weak	Temporary decline in the 2nd year of covid (285)
V4IEBITDACODE * V5VACODEE	3803,945	49	0	0,35	Strong	Recessionary exogenous shock (612)
V4IEBITDACODE * V6IVACODEE	4973,595	49	0	0,41	Strong	Recessionary exogenous shock (568)
V4IEBITDACODE * V7LCODE	131,35	49	0	0,07	Weak	Temporary decline in the 2nd year of covid (252)
V5VACODEE * V6IVACODEE	15562,41	49	0	0,72	Strong	Recessionary exogenous shock (1114)
V5VACODEE * V7LCODE	349,991	49	0	0,11	Weak	Recessionary exogenous shock (378)
V6IVACODEE * V7LCODE	453,476	49	0	0,12	Weak	Recessionary exogenous shock (316)

Source: own research

### RESEARCH RESULTS

I present the results of the multivariate analyses below. Based on the data analysed, the category „Recessionary exogenous shock” was the most frequent for most variable pairings. This underlines the crucial role and importance of this category in the economic environment and in the functioning of companies. Strong relationships were found for most of the variable pairs, especially for the variables V1SRCODE and V2ISRCODE. The high Phi and Cramer’s V values indicating strong relationships show that these variables are strongly correlated. Weaker relationships, such as for V3EBIDTARCODE \* V7LCODEE and V4IEBITDACODE \* V7LCODE, show lower Phi and Cramer’s V values, indicating that these variables are less closely related. For all pairs of variables, the Pearson Chi-Square test showed a significant relationship ( $p < 0.05$ ), suggesting that the relationships are not random but that there are real relationships between the variables. Overall, the analysis reveals

that economic shocks and downturns have a significant impact on the performance of firms and that these relationships show strong correlations between different financial indicators.

The analysis shows that the relationships between the different variables and the resilience of sales growth are weak for the most part, but in some cases moderate. The relationship between the adequacy of liquidity and the resilience of sales growth is weak but significant, implying that although there is some correlation, liquidity alone does not strongly predict the resilience of sales growth. The relationship between export orientation and the resilience of sales growth is significant but weak, i.e. export orientation has some impact on the resilience of sales growth, but is not a dominant factor. There is also a significant but weak relationship between solvency adequacy and the resilience of sales growth, suggesting that the solvency of the firm is somewhat related to sales growth, but not the main determinant. The relationship between ROA adequacy

**4. Table VISRCODE and relationships between explanatory variables**

VISRCODE	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
LR	29.094	18	0.047	0.047	Weak
EXP	60.985	18	0.000	0.068	Weak
SOL	34.372	18	0.011	0.051	Weak
ROA	192.828	18	0.000	0.121	Moderate
MCpS	99.829	18	0.000	0.087	Weak
COEpS	41.651	18	0.001	0.056	Weak
COGSpS	153.722	18	0.000	0.108	Moderate
SpTA	94.698	18	0.000	0.085	Weak
SAL	64.093	18	0.000	0.070	Weak

Source: own research

**5. Table V2SRCODE and the relationship between explanatory variables**

V2SRCODE	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
LR	38.617	21	0.011	0.054	Weak
EXP	72.480	21	0.000	0.074	Weak
SOL	31.645	21	0.064	0.049	Weak
ROA	241.704	21	0.000	0.135	Moderate
MCpS	97.525	21	0.000	0.086	Weak
COEpS	44.186	21	0.002	0.058	Weak
COGSpS	162.889	21	0.000	0.111	Moderate
SpTA	74.926	21	0.000	0.075	Weak
SAL	87.959	21	0.000	0.082	Weak

Source. Own research

and sales growth resilience is moderate and significant, indicating that ROA is a more important factor in sales growth resilience as it shows a stronger correlation. The relationship between the material cost to turnover ratio and the resilience of turnover growth is significant but weak, indicating that material costs have some impact on the resilience of turnover growth, but not a decisive one. The relationship between the labour cost to turnover ratio and the elasticity of turnover growth is weak but significant, suggesting that labour costs have some impact on the elasticity of turnover growth. The relationship between the turnover ratio and the elasticity of growth of turnover is moderate and significant, suggesting that the elasticity of growth of turnover is more significantly affected by the value of sales of goods sold. The relationship between the ratio of turnover to total assets and the resilience of turnover growth is significant but weak, suggesting that turnover to total assets has some impact on the resilience of turnover growth. The relationship between the appropriateness of the wage level and the resilience of sales growth is significant and weak, implying that the wage level has some impact on the resilience of sales growth, but is not a dominant factor. Overall, although a number of factors show significant relationships with the re-

silience of turnover growth, these relationships are typically weak. The exception is the ROA and the ELABE turnover ratios, where the relationships are moderate, suggesting that these elements play a more important role in the resilience of turnover growth. The results suggest that the resilience of sales growth is influenced by a number of factors, but that some factors, such as ROA and ELABE, are more important.

The analysis shows that the relationships between the different variables and the resilience of inflation-adjusted sales growth are largely weak, but in some cases moderate. The relationship between the adequacy of liquidity and the resilience of inflation-adjusted sales growth is weak but significant, implying that although there is some correlation, liquidity alone does not strongly predict the resilience of inflation-adjusted sales growth. The relationship between export orientation and the resilience of inflation-adjusted sales growth is significant but weak, i.e. export orientation has some impact on the resilience of inflation-adjusted sales growth, but is not a dominant factor. There is a significant but weak relationship between solvency adequacy and the resilience of inflation-adjusted sales growth, suggesting that the solvency of the firm is somewhat related to inflation-adjusted sales growth, but not the main determinant. The relationship between ROA adequacy and the resilience of inflation-adjusted sales growth is moderate and significant, indicating that ROA is a more important factor in the resilience of inflation-adjusted sales growth, as it shows a stronger correlation. The relationship between the ratio of the cost of materials to turnover and the resilience of inflation-adjusted turnover growth is significant but weak,

indicating that the cost of materials has some impact on the resilience of inflation-adjusted turnover growth, but not a significant one. The relationship between the labour cost to turnover ratio and the real elasticity of inflation-adjusted turnover growth is weak but significant, suggesting that labour costs have some impact on the real elasticity of inflation-adjusted turnover growth. The relationship between the turnover ratio of ELABE and the resilience of inflation-adjusted turnover growth is weak and significant, indicating that ELABE (value of purchases of goods sold) has a more significant impact on the resilience of inflation-adjusted turnover growth. The relationship between the ratio of turnover to total assets and the resilience of inflation-adjusted turnover growth is significant but weak, suggesting that turnover to total assets has some impact on the resilience of inflation-adjusted turnover growth. The relationship between the appropriateness of the wage level and the resilience of inflation-adjusted sales growth is significant and weak, implying that the wage level has some impact on the resilience of inflation-adjusted sales growth, but is not a dominant factor. Overall, although a number of factors show significant relationships with the elasticity of inflation-adjusted revenue growth, these relationships are typically weak. The

exception is the ROA and the ELABE turnover ratio, where the relationships are moderate, suggesting that these elements play a more important role in the resilience of inflation-adjusted turnover growth. The results suggest that the resilience of inflation-adjusted sales growth is influenced by a number of factors, but that some factors, such as ROA and ELABE, are more important.

The analysis shows that the relationships between the different variables and the resilience of EBITDA growth are weak for the most part, but moderate in some cases. The relationship between the adequacy of liquidity and the resilience of EBITDA growth is weak but significant, implying that although there is some correlation, liquidity alone does not strongly predict the resilience of EBITDA growth. The relationship between export orientation and the resilience of EBITDA growth is significant but weak,

i.e. export orientation has some impact on the resilience of EBITDA growth, but is not a dominant factor. There is a non-significant and weak relationship between solvency adequacy and the resilience of EBITDA growth, suggesting that the solvency of the firm is not significantly correlated with EBITDA growth. The relationship between ROA adequacy and the resilience of EBITDA growth is moderate and significant, indicating that ROA is a more important factor in the resilience of EBITDA growth, as it shows a stronger correlation. The relationship between the material cost to sales ratio and the resilience of EBITDA growth is significant but weak, indicating that material costs have some impact on the resilience of EBITDA growth, but not a decisive one. The relationship between the labour cost to turnover ratio and the elasticity of growth of EBITDA is weak but significant, suggesting that labour costs have some impact on the elasticity of growth of EBITDA. The relationship between the ELABE turnover ratio and the resilience of EBITDA growth is also significant but weak, suggesting that ELABE (value of goods sold) has some impact on the resilience of EBITDA growth. The relationship between the ratio of turnover to total assets and the elasticity of growth of EBITDA is significant but weak, suggesting that turnover to total assets has some impact on the elasticity of growth of EBITDA. The relationship between the appropriateness of the wage level and the resilience of EBITDA growth is weak but significant, implying that the wage level has some impact on the resilience of EBITDA growth, but is not a dominant factor. Overall, although several factors show significant relationships with the resilience of EBITDA growth, these relationships are typically weak. The exception is ROA, where the relationship is moderate, suggesting that this element plays a more important role in the resilience of EBITDA growth. The results suggest that the resilience of EBITDA growth is affected by a number of factors, but that some factors, such as ROA, are more important.

**6. Table Relationship between V3EBIDTARCODE and explanatory variables**

V3EBIDTARCODE <sub>k</sub>	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
LR	38.127	21	0.012	0.054	Weak
EXP	64.411	21	0.000	0.070	Weak
SOL	28.993	21	0.114	0.047	Weak
ROA	346.718	21	0.000	0.162	Moderate
MCpS	61.075	21	0.000	0.068	Weak
COEpS	74.797	21	0.000	0.075	Weak
COGSpS	65.237	21	0.000	0.070	Weak
SpTA	61.315	21	0.000	0.068	Weak
SAL	38.540	21	0.011	0.054	Weak

Source. Own research

**7. Table: relationships between V4IEBITDARCODE and explanatory variables**

V4IEBITDARCODEE	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
Liquidity adequacy (LR)	43.672	21	0.003	0.058	Weak
Export orientation (EXP)	63.994	21	0.000	0.070	Weak
Solvency adequacy (SOL)	44.231	21	0.002	0.058	Weak
ROA adequacy (ROA)	263.188	21	0.000	0.141	Moderate
Material Cost to Sales Ratio (MCpS)	72.663	21	0.000	0.074	Weak
Cost of earnings to revenue ratio (COEpS)	68.878	21	0.000	0.072	Weak
COMPREHENSIVE Turnover Share (COGSpS)	52.423	21	0.000	0.063	Weak
Turnover of Total Assets Ratio (SpTA)	53.627	21	0.000	0.064	Weak
Salary adequacy (SAL)	52.879	21	0.000	0.063	Weak

Source. Own research

The link between liquidity adequacy and economic shocks is weak. This indicates that companies The analysis shows that the relationships between the various variables and the resilience of inflation-adjusted EBITDA growth are largely weak, but in some cases moderate. The relationship between the adequacy of liquidity and the resilience of inflation-adjusted EBITDA growth is weak but significant, implying that although there is some correlation, liquidity alone does not strongly predict the resilience of inflation-adjusted EBITDA growth. The relationship between export-orientation and the resilience of inflation-adjusted EBITDA growth is significant but weak, i.e. export-orientation has some impact on the resilience of inflation-adjusted EBITDA growth, but is not a dominant factor. There is also a significant but weak relationship between solvency adequacy and the resilience of inflation-adjusted EBITDA growth, suggesting that the solvency of the firm is somewhat related to inflation-adjusted EBITDA growth, but not the main determinant. The rela-

tionship between ROA adequacy and the resilience of inflation-adjusted EBITDA growth is moderate and significant, indicating that ROA is a more important factor in the resilience of inflation-adjusted EBITDA growth, as it shows a stronger correlation. The relationship between the ratio of cost of materials to turnover and the elasticity of growth of inflation-adjusted EBITDA is significant but weak, indicating that cost of materials has some impact on the elasticity of growth of inflation-adjusted EBITDA, but not a significant one. The relationship between the labour cost to turnover ratio and the elasticity of growth of inflation-adjusted EBITDA is weak but significant, suggesting that labour costs have some impact on the elasticity of growth of inflation-adjusted EBITDA. The relationship between the ELABE turnover ratio and the resilience of growth in inflation-adjusted EBITDA is also significant but weak, suggesting that ELABE (value of purchases of goods sold) has some impact on the resilience of growth in inflation-adjusted EBITDA. The relationship between the ratio of turnover to total assets and the resilience of growth in inflation-adjusted EBITDA is significant but weak, suggesting that turnover to total assets has some impact on the resilience of growth in inflation-adjusted EBITDA. The relationship between the appropriateness of the wage level and the resilience of the growth of inflation-adjusted EBITDA is weak but significant, implying that the wage level has some impact on the resilience of the growth of inflation-adjusted EBITDA, but is not a dominant factor. Overall, although several factors show significant relationships with the elasticity of growth of inflation-adjusted EBITDA, these relationships are typically weak. The exception is ROA, where the relationship is moderate, suggesting that this element plays a more important role in the resilience of inflation-adjusted EBITDA growth. The results suggest that the resilience of inflation-adjusted EBITDA growth is affected by a number of factors, but that some factors, such as ROA, are more important.

The analysis shows that the relationships between the different variables and the resilience of value added growth are weak for the most part, but in some cases moderate. The relationship between the adequacy of liquidity and the resilience of value added growth is weak but significant, implying that although there is some correlation, liquidity alone does not strongly predict the resilience of value added growth. The relationship between export orientation and the resilience of value added growth is significant but weak, i.e. export orientation has some impact on the resilience of value added growth, but is not a dominant factor. There is also a significant but weak relationship between solvency adequacy and the resilience of value added growth, suggesting that the solvency of the firm is somewhat related to value added growth, but not the main determinant. The relationship between ROA adequacy and the resilience of value added growth is moderate and significant, indicating that ROA is a more important factor in

the resilience of value added growth, as it shows a stronger correlation. The relationship between the cost of materials turnover ratio and the resilience of value added growth is significant but weak, indicating that material costs have some impact on the resilience of value added growth, but not a decisive one. The relationship between the labour cost to turnover ratio and the elasticity of growth of value added is weak but significant, suggesting that labour costs have some impact on the elasticity of growth of value added. The relationship between the GVA to sales ratio and the resilience of value added growth is also significant but weak, suggesting that GVA (value of purchases of goods sold) has some impact on the resilience of value added growth. The relationship between the ratio of turnover to total assets and the elasticity of growth of value added is significant but weak, suggesting that turnover to total assets has some impact on the elasticity of growth of value added. The relationship between the appropriateness of the wage level and the resilience of value added growth is weak but significant, implying

8. Table 1: Relationship between V5VACODE and explanatory variables

V5VACODE	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
Liquidity adequacy (LR)	50.938	21	0.000	0.068	Weak
Export orientation (EXP)	47.412	21	0.001	0.066	Weak
Solvency adequacy (SOL)	55.095	21	0.000	0.071	Weak
ROA adequacy (ROA)	510.408	21	0.000	0.172	Moderate
Material Cost to Sales Ratio (MCpS)	63.952	21	0.000	0.076	Weak
Cost of earnings to revenue ratio (COEpS)	68.504	21	0.000	0.080	Weak
COMPREHENSIVE Turnover Share (COGSpS)	77.714	21	0.000	0.085	Weak
Turnover of Total Assets Ratio (SpTA)	86.666	21	0.000	0.089	Weak
Salary adequacy (SAL)	78.314	21	0.000	0.085	Weak

Source. Own research

V6IVACODE	Chi2	df	Sig. (p-value)	Cramer's V	Strength of connection
Liquidity adequacy (LR)	56.403	21	0.000	0.066	Weak
Export orientation (EXP)	47.687	21	0.001	0.061	Weak
Solvency adequacy (SOL)	50.664	21	0.000	0.062	Weak
ROA adequacy (ROA)	396.188	21	0.000	0.175	Moderate
Material Cost to Sales Ratio (MCpS)	78.436	21	0.000	0.078	Weak
Cost of earnings to revenue ratio (COEpS)	86.196	21	0.000	0.081	Weak
COMPREHENSIVE Turnover Share (COGSpS)	70.192	21	0.000	0.074	Weak
Turnover of Total Assets Ratio (SpTA)	90.226	21	0.000	0.083	Weak
Salary adequacy (SAL)	76.177	21	0.000	0.077	Weak

Source. Own research

that the wage level has some impact on the resilience of value added growth, but is not a dominant factor. Overall, although several factors show significant relationships with the resilience of value added growth, these relationships are typically weak. The exception is ROA, where the relationship is moderate, suggesting that this element plays a more important role in the resilience of value added growth. The results suggest that the resilience of value added growth is influenced by a number of factors, but that some factors, such as ROA, are more important. Table 1: Relationship between V6IVACODE and explanatory variables

The table shows that the relationship between most of the variables and the resilience of inflation-adjusted value added growth is weak, except for ROA adequacy (ROA), where the relationship is moderately strong. Weak relationships indicate that the financial ratios of firms are mostly stable and less sensitive to the resilience of inflation-adjusted value added growth. ROA, on the other hand, shows a higher sensitivity to economic changes, which can have a significant impact on firms' profitability. These results can help companies to understand which financial ratios and economic shocks are more or less strongly correlated and to adjust their strategies accordingly.

The table shows that the relationship between most of the variables and the resilience of the change in the number of employees is weak, except for export orientation (EXP) and the turnover ratio of the ELABE (COGSpS), where there is no statistically significant relationship. This indicates that for these variables, economic shocks do not significantly affect the resilience of the change in the number of employees. The weak relationships for the other variables suggest that, although there is some correlation, the impact of economic shocks on these financial indicators is not significant. For the ROA adequacy variable, there is also a weak but statistically significant relationship, which may suggest that profitability indicators are somewhat sensitive to economic shocks.

The common patterns show that, in general, the impact of economic shocks on financial indicators is weak, although significant. The different patterns indicate that some variables are more sensitive to certain economic shocks while others are less sensitive. These results can help economic policymakers understand which financial indicators are worth paying attention to during economic shocks and which are less sensitive to these changes.

### CONCLUSIONS

The results of the study highlight the dominant role of recessionary exogenous shocks in influencing corporate financial indicators. While most financial indicators show weak correlations with economic shocks, key indicators such as ROA and wage levels show medium sensitivity, indicating areas where

**9. Table 1: Relationship between V7LCODE and explanatory variables**

V7LCODE	Chi <sub>2</sub>	d f	Sig. (p-value)	Cramer, s V	Strength of connection
Liquidity adequacy (LR)	46.9 81	2 1	0.001	0.060	Weak
Export orientation (EXP)	17.4 48	2 1	0.684	0.036	No connection
Solvency adequacy (SOL)	38.1 43	2 1	0.012	0.054	Weak
ROA adequacy (ROA)	79.6 01	2 1	0.000	0.078	Weak
Material Cost to Sales Ratio (MCpS)	28.8 61	2 1	0.117	0.047	Weak
Cost of earnings to revenue ratio (COEpS)	57.9 12	2 1	0.000	0.066	Weak
COMPREHENSIVE Turnover Share (COGSpS)	14.0 67	2 1	0.867	0.033	No connection
Turnover of Total Assets Ratio (SpTA)	30.1 44	2 1	0.089	0.048	Weak
Salary adequacy (SAL)	83.6 52	2 1	0.000	0.080	Weak

Source. Own research

**Table 1: Lessons from the analysis of variables**

Common patterns	Divergent patterns
For most variables, Cramer's V values show a weak relationship between economic shocks and financial indicators. This indicates that although there is some correlation, the effect of economic shocks is not significant.	Some variables, such as the COGSpS and EXP, do not show a statistically significant relationship with economic shocks in some cases. This implies that these variables are less sensitive to economic shocks.
In several cases, the p-values are statistically significant ( $p < 0.05$ ), suggesting that there is a correlation between economic shocks and the variables. However, due to weak Cramer's V values, these correlations are not strong	Some economic shocks, such as the recessionary exogenous shock (V7LCODEE), have a larger impact on variables than other economic shocks. This difference is reflected in differences in Chi2 values and significance levels.
For the variables ROA (ROA adequacy) and SAL (Wage Level Adequacy), a significant relationship is found for almost all economic shocks. This suggests that these variables are sensitive to economic shocks.	For the cost of earnings to revenue ratio (COEpS), different economic shocks affect the results to different extents, as indicated by the variation in Chi2 values and Cramer's V values.

Source. Own research

companies should focus their risk management efforts. These results underline the importance of strategic planning and financial flexibility to effectively weather economic turbulence.

Key findings of the study:

- Dominance of recessionary exogenous shocks: the most common and most significant impact on financial indicators;
- ROA sensitivity: medium sensitivity to economic shocks, in particular positive hysteresis, indicating potential areas for performance improvement. These shocks were the most common in the data set and showed significant relationships with most financial indicators. For example, liquidity adequacy (LR) and export orientation (EXP) were strongly affected by these shocks;
- COVID-19 impact: significant but variable impacts on financial indicators, highlighting the need for adaptive financial strategies. Both the immediate and long-term COVID-19 effects had a significant but variable impact on financial indi-

- cators, with temporary downturns showing a strong relationship with liquidity and solvency indicators;
- Weak overall correlation: most financial indicators show a weak correlation with economic shocks, indicating the inherent stability of certain financial practices;
  - Positive hysteresis: Although less frequent, this category had a significant impact on ROA, indicating that some companies managed to improve the profitability of their assets despite the economic downturn.

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