ECONOMIC SYNERGY: LIQUIDITY AND ACTIVITY IN V4 ENTERPRISES

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Abstract:

Research background: It is essential to examine the correlation between liquidity and enterprise activity in the Visegrad Group, which comprises Central European countries, given the current economic conditions. These variables are the basis for economic synergy and operate as crucial factors in determining the financial sustainability and competitiveness of firms in the region.

Purpose of the article: This essay aims to offer a comprehensive comprehension of the correlation between liquidity and activity in V4 firms. We examine the reciprocal impact and collective contribution of these two factors on regional economic dynamics. We aim to analyse the fundamental elements that influence this connection and provide precise suggestions for the commercial setting.

Methods: We utilised an amalgamation of quantitative and statistical methodologies in order to accomplish the predetermined goals. Median values for specific liquidity and activity indicators among V4 enterprises were computed using Microsoft Excel for the quantitative analysis. Furthermore, the significance of variations between years was evaluated by employing the Friedman test.

Findings & Value added: Our research demonstrates that activity and liquidity have a substantial effect on the V4 economy. We have identified and illustrated the variation of important factors that influence this relationship across industries. This article enhances comprehension of economic synergy in the region and provides business leaders, economists, and the general public with an interest in Central European business matters with insightful information.

Keywords: Friedman test; liquidity indicators; activity indicators; Visegrad Group

JEL Classification: C12; C13; C52

1. Introduction

The astute administration of liquidity and activity has long been acknowledged as a vital facet of efficient business operations. In today's economic environment, businesses encounter ever-changing obstacles and possibilities, necessitating a strategic approach to navigate through

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financial uncertainties. Notable research on effective liquidity and activity management has been conducted by Winarta and Kuntadi (2022), Sipayung et al. (2022), Sewu et al. (2022), and Saputra et al. (2023). These experts have offered unique perspectives on the ever-changing nature of business operations and the shifting tactics necessary to sustain financial strength in today's demanding economic environment. The importance of liquidity, which refers to a company's capacity to fulfil short-term obligations, and activity, which includes operational efficiency and asset utilization, has grown significantly.

The capacity of an organization to convert its assets into cash with minimal loss constitutes liquidity. This particular capability affords enterprises financial latitude and empowers them to efficiently oversee their payment obligations (Mazanec, 2023).

Blazek et al. (2023) they explain that in the contrast, measurable metrics like production rates, sales volume, or other comparable metrics serve to demonstrate the intensity and motion of entrepreneurial endeavours. Enterprise operations comprise the production, commerce, and distribution processes, all of which are integral components of this concept. By employing these definitions as a basis for our subsequent investigations, we are consistently able to assess the correlation between entrepreneurial activity and liquidity within the Visegrad Group. Our objective is to furnish comprehensive frameworks that facilitate comprehension of the economic ramifications of these pivotal factors in the region (Mazanec, 2022).

The study of liquidity and activity has its origins in the early stages of financial analysis, when enterprises aimed to improve their financial well-being. Scholars like Bruggen et al. (2017), Vlaev and Elliott (2014), and Netemeyer et al. (2018) have explored the concept of financial well-being in their respective works, providing valuable insights into the broader context of organizational prosperity. Over time, the emphasis has shifted towards highlighting the complex interplay between liquidity and activity. Researchers such as Susanti and Samara (2021), Lomidze (2016), and Serences et al. (2010) have delved into the intricacies of liquidity and activity, shedding light on their dynamic relationship. These two aspects are interconnected, with each exerting an influence on the other in an intricate manner that defines the entire financial situation of an organization.

Within this framework, the analysis of liquidity often entails a careful assessment of many indicators, with particular emphasis placed on liquidity ratios. Significant metrics, such as the current ratio (liquidity ratio 1st degree), quick ratio (liquidity ratio 2nd degree), and cash ratio (liquidity ratio 3rd degree), offer valuable information about a company's capacity to adequately meet its short-term obligations.

Equally, in the field of activity, important measurements consist of inventory turnover, total asset turnover, and current asset turnover.

Gaining a comprehensive understanding of the interdependent relationship between liquidity and activity has become crucial not just for financial analysts but also for firm executives. In the realm of financial and economic analysis, liquidity and activity are crucial metrics that offer valuable insights into a company's financial well-being and operational efficiency. Researchers such as Mitra and Mitra (2011), Bell and Zaric (2013), Fanning and Grant (2013), and Laursen and Thorlund (2016) have significantly contributed to unraveling the complexities of liquidity and activity. Their studies have provided valuable perspectives, enriching the understanding of how these metrics impact an organization's financial health and operational effectiveness. Management teams analyze these measures to evaluate the company's capacity to fulfil its immediate financial responsibilities and maximize the utilization of its resources.

This article explores the particular circumstances of V4 enterprises, which consist of the Central European nations belonging to the Visegrad Group. Nevertheless, it is crucial to acknowledge that the significance of liquidity and activity extends beyond this specific region.

Internationally, there has been an increase in discourse around these crucial financial indicators. The work of researchers such as Dolfin et al. (2021), Pardo and Pascual (2016), Clapp et al. (2017), and Moser and Barrett (2006) has significantly contributed to the broader international dialogue on liquidity and activity. Their studies offer diverse perspectives, enriching the understanding of these financial metrics and their implications for global financial and economic analyses. This article seeks to elucidate the intricate dynamics of liquidity and activity, highlighting their interdependent nature and wider ramifications for global financial and economic studies.

2. Literature Review

The investigation into liquidity and activity in the economic sphere has experienced a significant evolution since its inception, progressing from initial financial analyses to the present-day emphasis on complex interrelationships and worldwide implications. Within the framework of Central European countries, specifically those comprising the V4, the interplay between activity and liquidity in terms of economic integration has come to be of critical importance. This chapter undertakes an in-depth exploration of the current corpus of knowledge, encompassing significant historical events, regional distinctiveness, and global viewpoints, in order to develop a holistic comprehension of these pivotal financial indicators.

The subsequent figure (Figure 1) delineates the progression of activities that shall be undertaken during the formulation of the literature review for the present chapter.

Figure 1: Overview of the sequence of steps in Literature review
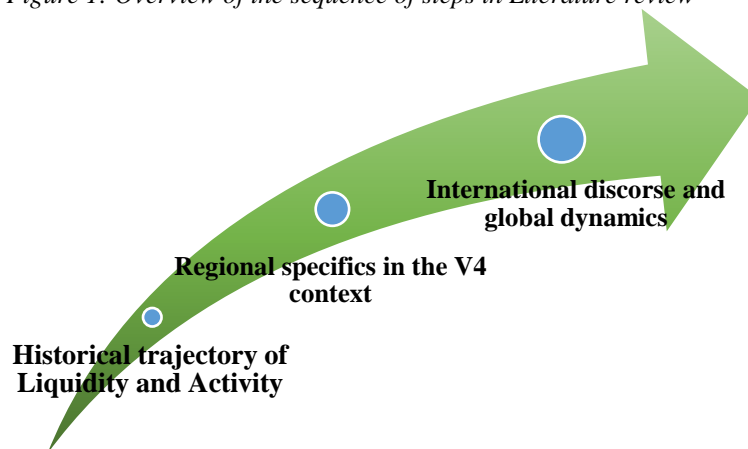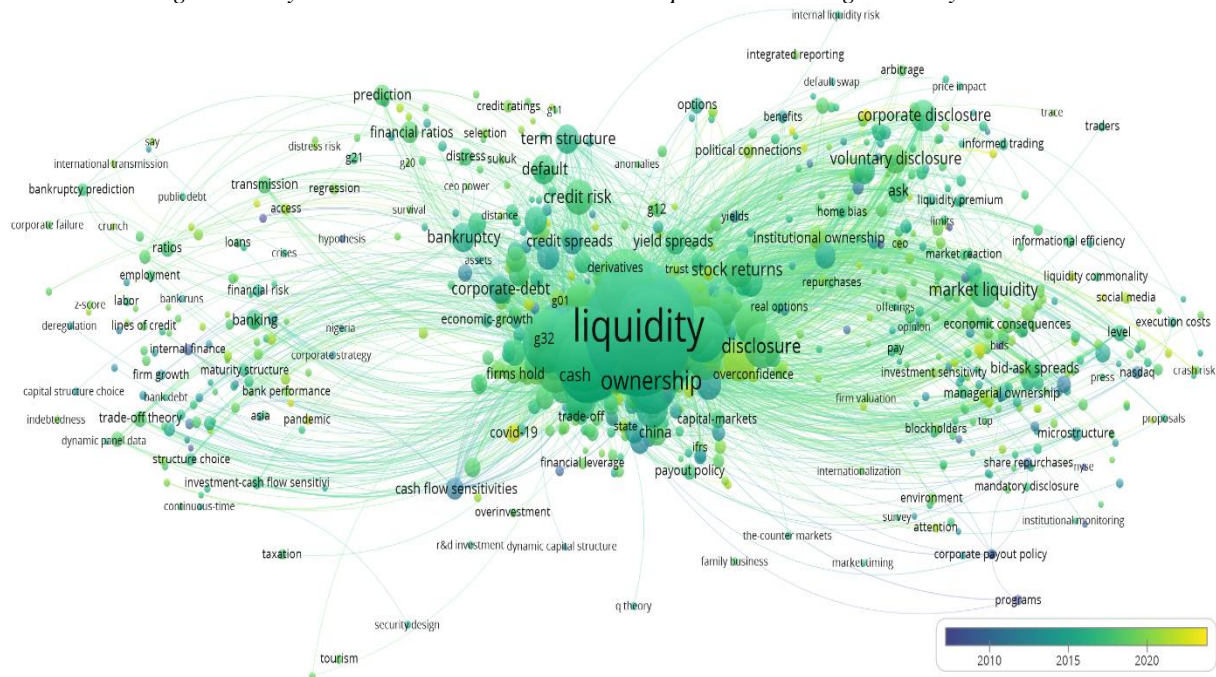

Source: own research

2.1. Historical trajectory of Liquidity and Activity

The historical trajectory of liquidity and activity pertains to the progressive development and progression of these terms within the realm of financial analysis and business operations. The objective of this segment is to trace the historical progression of the perception, comprehension, and implementation of these metrics

We utilised bibliometric analysis to conduct an exhaustive evaluation of keywords associated with activity and liquidity in scholarly articles. The VosViewer tool was employed to generate a graphical depiction of the evolution of frequently used keywords. The utilisation of this visualisation facilitated the detection of patterns in research and emphasised the development of notions pertaining to activity and liquidity. The chart employs colour gradations to denote the temporal dimension; keywords that have been utilised historically are represented

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by darker hues, whereas more recent trends are depicted in lighter shades. By employing their respective keywords, we conducted a methodical examination of the progression of research in the domain of liquidity and activity. Figure 2 captures the use of keywords over the years associated with the term business liquidity.
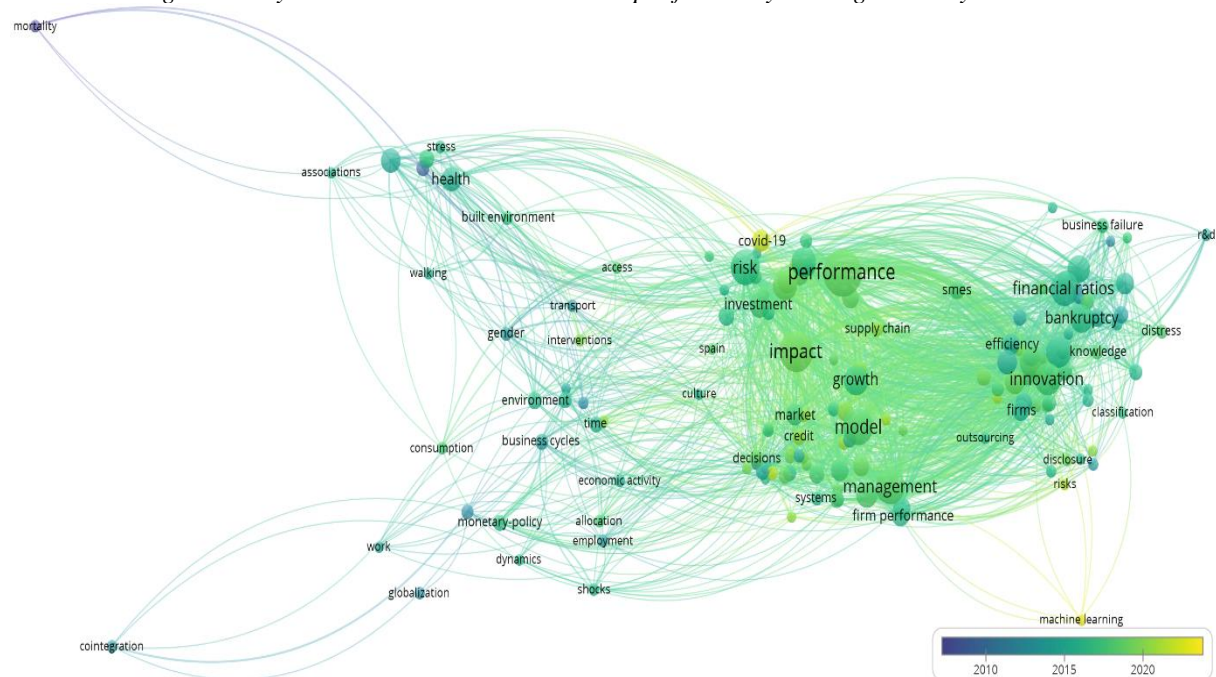
Figure 2: Key terms associated with the term "liquidation" throughout the years

Source: own research

Figure 3 captures the use of keywords over the years associated with business activity.

Figure 3: Keywords associated with the concept of "activity" throughout the years

Source: own research

Evidently, despite the fact that both terms pertain to the business, the emphasis on the keywords used in their respective contexts is quite dissimilar. The quantity of keywords employed to represent the concepts under investigation also exhibits a notable distinction. This leads us to the conclusion that liquidity is a more significant concern for businesses than activity, despite their close relationship.

2.2. Regional specifics in the V4 context

The historical economic alliances of the V4 nations date back to the 1990s, when they first began the process of transitioning to market economies. Slovakia, the Czech Republic, Hungary, and Poland are forging interactive connections in an effort to establish economic foundations and foster mutual development. The establishment of joint membership in the European Union in 2004 invigorated their collaboration and facilitated the unrestricted flow of capital, products, and services. The stability of the economic environment fostered by the V4 countries through synergy and mutual support has stimulated innovation, trade, and investment in Central Europe.

The economic positions of the V4 countries in Central Europe are significantly influenced by geopolitical factors, given that they form a strategic alliance characterised by shared challenges and interests. Their historical connections and central European location make them a vital link between the East and the West. As a result of their increased economic influence and competitiveness, cooperation among the V4 members bolstered their standing in the globalised world. The influence of these factors on regional and global economic policies is crucial.

Within the realm of the V4 economy, the cooperative and dynamic progress in the Central European region presents an intriguing perspective. The varied sectors that underpin the economics of these nations are their critical sectors. Strong industrial sectors, including mechanical engineering, the automotive industry, and electrical engineering, define the Czech Republic. It is renowned for its capacity to attract foreign direct investment and its significant technological potential. Hungary places emphasis on a multitude of sectors, encompassing the automotive, culinary, and electronics industries. Economic strength is attributable to its strategic location as a transit nation for East-West trade. The greatest economy in the V4 region is that of Poland. It is renowned for its dynamic industrial sector, particularly in the metalworking, energy, and mining industries. Due to its robust infrastructure and expansive domestic market, Poland is an appealing location for investment. Despite having a relatively modest economic volume, Slovakia is a leader in the manufacturing of automobiles and electronic equipment. Its sector maintains strong interconnections with neighbouring nations and entities within the V4.

The locations of the V4 countries in Central Europe exert a substantial influence on their business models. They strive to establish regional cooperation and diversify their business relationships. By virtue of their substantial integration into European economic structures, these nations strive to strike a balance between their relations with the EU's internal market and the international community.

The V4 exemplifies prosperous economic integration in Central Europe, wherein every nation made a distinct and valuable contribution to the collective economic prowess of the area. Collaboration in this domain establishes a steadfast foundation for expansion and global competitiveness.

The V4 nations establish a dynamic region in which collaborative economic initiatives serve as the foundation for economic unity. The Visegrad Fund, which promotes collaboration in the domains of innovation, infrastructure, and regional progress, is one such initiative. These

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initiatives facilitate the reduction of inequalities among the V4 nations and bolster their economic development.

The impact of cultural subtleties on liquidity and activity in the V4 nations is apparent in their varied business and financial strategies. In Poland, the activity and liquidity of a traditional family business may be significant factors; conversely, in the Czech Republic, technological innovation may be prioritised.

Concurrently, cultural values impact investment and risk management strategies. The inclination towards risk-taking in Hungary could potentially be attributed to a heightened cultural value placed on innovation and novel business prospects, factors that could influence regional liquidity and activity.

In general, cultural nuances and collaborative economic initiatives are significant determinants of activity and liquidity in the V4 nations. Their harmonious integration enhances economic unity in the area while demonstrating due regard for the distinct attributes of each nation.

2.3. International discourse and global dynamics

In an endeavour to maintain a balanced position on the international stage, the V4 nations' international discourse and global dynamics reflect this. The V4 actively participates in international cooperation with regards to politics, industry, and society. Among the current trends are the pursuit of fresh trade relations, political alliances, and cultural exchange opportunities. These characteristics serve as evidence of their capacity to influence international events and participate in global dialogues, all the while preserving their unique identity and adjusting to evolving global trends.

A multitude of factors that influence the economy and business operations in the region are intricately intertwined with ongoing debates regarding liquidity and business activity in the V4 countries. These nations actively participate in the global arena and endeavour to attain a condition of equilibrium in the global economic system. Indicators of the financial sustainability and competitiveness of the business sector in the V4 countries include liquidity and business activity. In the context of regional particulars and global dialogue, the significance of these indicators increases in relation to comprehending the economic unity and interdependencies among the V4 nations.

3. Methodology

We incorporated data from the ORBIS database, which was accessible to researchers affiliated with the Department of Economics at the University of Zilina in Zilina, as part of this research endeavour. Our analytical framework comprised a comprehensive examination of the median values of chosen liquidity indicators for the V4 countries, including ratio and difference indicators. Concurrently, the aforementioned process was executed on specific activity indicators within the aforementioned nations. For calculations, we utilized MS Excel software tools, and for statistical analyses, we employed IBM SPSS Statistics.

In order to ascertain substantial fluctuations in activity and liquidity indicators for specific years spanning from 2016 to 2021, we implemented the Friedman test. The aforementioned analytical methodology yielded an exhaustive examination of the dynamics governing the growth of activity and liquidity in the V4 region. By facilitating a more comprehensive comprehension of the economic landscape in a specific region, the assessment of these data can provide a significant aid to both scholars and professionals in the fields of economic analysis

and business administration. The methodology employed is founded on precise data processing, thereby facilitating an impartial evaluation of liquidity and activity in Central Europe.

The median values of specific liquidity indicators for V4 countries are presented in Table 1, while the median values of specified activity indicators for V4 countries are presented in Table 2.

Table 1: The median values of selected liquidity indicators for the V4 countries

	2016	2017	2018	2019	2020	2021
Cash Ratio	0.20	0.20	0.18	0.19	0.24	0.22
Quick Ratio	0.75	0.73	0.62	0.64	0.68	0.64
Current Ratio	1.20	1.17	1.10	1.07	1.14	1.13

Source: own research

Table 2: The median values of selected activity indicators for the V4 countries

	2016	2017	2018	2019	2020	2021
Inventory Turnover	0.21	0.25	0.27	0.25	0.28	0.27
Assets Turnover	0.05	0.05	0.06	0.06	0.06	0.06
Current Assets Turnover	0.08	0.09	0.09	0.10	0.10	0.11

Source: own research

4. Results

The application of pairwise comparison in accordance with the Friedman test serves the purpose of discerning similarities or differences among groups. The Friedman test is a statistical method used to compare numerous groups; however, it does not provide information regarding the specific groups that are similar or distinct from one another. Hence, the pairwise method is employed to ascertain the presence of statistically significant disparities among various groups. Pairwise comparisons involve comparing pairs of groups derived from the Friedman test using a statistical test that evaluates the significance of differences between groups, such as the Wilcoxon test. Subsequently, an assessment is conducted to ascertain the similarity or dissimilarity between each pair of groups, predicated upon the outcome of the test. If the statistical test yields a statistically significant result, it indicates that there is a meaningful distinction between the groups being compared. If this condition is not met, it indicates that the groups exhibit similarities. The utilisation of pairwise comparison, as facilitated by the Friedman test, enables the identification of groups that can be subjected to further scrutiny through the application of other statistical tests.

The data obtained from IBM SPSS Statistics indicated that the distribution of the data does not conform to a normal distribution. Furthermore, as the variables being considered are being compared across different time points, it may be inferred that these variables are dependent on each other. In order to do the extra math, the Friedman test, which is a repeated-measures analysis of variance (ANOVA) test, was used to compare of the selected indicators.

In the context of statistical testing, the formulation of hypotheses holds significant importance since it enables the clear delineation of the research topic being investigated. To maintain the statistical integrity of the hypothesis evaluation, a null hypothesis and an alternative hypothesis were formulated and subsequently evaluated at a significance threshold of $\alpha = 0.05$.

4.1. Pairwise Comparison of Selected Liquidity Indicators Using the Friedman Test

Assessing liquidity is a critical component in the endeavour to attain a thorough comprehension of financial dynamics. Liquidity, an essential component of financial stability,

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represents an organisation's capacity to fulfil immediate financial obligations. When scrutinising an intricate network of financial indicators, our focus shifts to a pairwise comparison of particular liquidity metrics. By employing the Friedman test, one can effectively identify substantial fluctuations in these indicators across numerous time intervals. The objective of this chapter is to delve into the intricacies of liquidity ratios as they pertain to the Friedman test. Through the implementation of a reciprocal comparison methodology, our objective is to unveil temporal patterns and possible distinctions among the chosen indicators. The examination is of the utmost importance in uncovering nuanced fluctuations in liquidity, thereby enabling a more profound understanding of the financial robustness of enterprises functioning within the examined geographical area.

For statistical analysis, a null and alternative hypothesis were set, and they were evaluated for statistical significance at $\alpha = 0.05$. For pairwise comparison, the Related-Samples Friedman's Two-Way Analysis of Variance by Ranks was utilized.

H_0: The distribution of indicators in V4 countries remains consistent, and the size of indicators is not influenced by time.

H_1: The distribution of indicators is not uniform in V4. The size of indicators is influenced by time.

Table 3: Summary of Test Results

Summary of Test Results			
Indicator	**Null hypothesis**	**Significance**	**Decision**
Cash Ratio	The distributions of Cash Ratio 2021, Cash Ratio 2020, Cash Ratio 2019, Cash Ratio 2018, Cash Ratio 2017 and Cash Ratio 2016 are the same.	<0.001	Reject the null hypothesis.
Quick Ratio	The distributions of Quick ratio 2021, Quick ratio 2020, Quick ratio 2019, Quick ratio 2018, Quick ratio 2017 and Quick ratio 2016 are the same.	<0.001	Reject the null hypothesis.
Current Ratio	The distributions of Current Ratio 2021, Current Ratio 2020, Current Ratio 2019, Current Ratio 2018, Current Ratio 2017 and Current Ratio 2016 are the same.	<0.001	Reject the null hypothesis.
Inventory Turnover	The distributions of Inventory Turnover 2021, Inventory Turnover 2020, Inventory Turnover 2019, Inventory Turnover 2018, Inventory Turnover 2017 and Inventory Turnover 2016 are the same.	<0.001	Reject the null hypothesis.
Assets Turnover	The distributions of Assets Turnover 2021, Assets Turnover 2020, Assets Turnover 2019, Assets Turnover 2018, Assets Turnover 2017 and Assets Turnover 2016 are the same.	<0.001	Reject the null hypothesis.
Current Assets Turnover	The distributions of Current Assets Turnover 2021, Current Assets Turnover 2020, Current Assets Turnover 2019, Current Assets Turnover 2018, Current Assets Turnover 2017 and Current Assets Turnover 2016 are the same.	<0.001	Reject the null hypothesis.

Source: own research

Based on the testing, it was found that all indicators have a significance lower than the significance level α. This implies that the null hypothesis is rejected, and the alternative hypothesis is accepted for all indicators. Therefore, we can conclude that the distribution of indicators in V4 countries is not uniform. With this confirmation, the pairwise comparison of liquidity and activity indicators can proceed.

The test statistic utilised in the Friedman test holds significance as it enables the evaluation of the presence of significant disparities among group results in multiple comparisons. The numerical indicator in question serves as a means of determining whether to reject the null hypothesis, which posits the absence of any differences between groups, or to accept it, given the presence of statistically significant differences. Hence, the inclusion of Table 4 presents the test statistical outcomes for each individual indicator in a pairwise comparison.

Table 4: Results of the test statistics for selected indicators

Sample 1-Sample 2	Cash Ratio	Quick Ratio	Current Ratio	Inventory Turnover	Assets Turnover	Current Assets Turnover
2016-2017	-0.086	-0.102	-0.322	-0.339	-0.322	-0.331
2016-2018	-0.543	-0.788	-0.869	-0.476	-0.098	-0.192
2016-2019	-0.351	-0.894	-0.996	-0.800	-0.959	-0.608
2016-2020	0.269	-0.380	-0.751	-0.651	-0.882	-0.755
2016-2021	-0.012	-0.714	-0.747	-1.053	-0.984	-1.237
2017-2018	-0.457	-0.686	-0.547	-0.137	0.224	0.139
2017-2019	-0.265	-0.792	-0.673	-0.461	-0.637	-0.278
2017-2020	0.355	-0.278	-0.429	-0.312	-0.559	-0.424
2017-2021	0.073	-0.612	-0.424	-0.714	-0.661	-0.906
2018-2019	0.192	-0.106	-0.127	-0.324	-0.861	-0.416
2018-2020	0.812	0.408	0.118	-0.176	-0.784	-0.563
2018-2021	0.531	0.073	0.122	-0.578	-0.886	-1.045
2019-2020	0.620	0.514	0.245	-0.800	0.078	-0.147
2019-2021	0.339	0.180	0.249	-0.253	-0.024	-0.629
2020-2021	-0.282	-0.335	0.004	-0.402	-0.102	-0.482

Source: own research

The significance value obtained from individual pairwise comparisons is used in the Friedman test to inform decision-making. This value indicates whether or not there are statistically significant variations in the group ratings across multiple measurements. By utilising the significance value, one can assess whether the null hypothesis, which posits no differences between the groups, can be refuted in favour of the alternative hypothesis, which asserts the existence of statistically significant differences. We adopt the alternative hypothesis and reject the null hypothesis if the significance is less than the chosen significance level (typically $\alpha = 0.05$). This indicates that there are statistically significant differences between the groups. The significance values that come up from comparing two people pairwise show which groups have different opinions on how to read activity and liquidity indicators.

The following null and alternative hypotheses were chosen:

H_0: The given pair of indicators is not significantly different from each other.

H_1: The given pair of indicators is significantly different from each other.

Table 5: Final significance values for selected indicators

Sample 1-Sample 2	Cash Ratio	Quick Ratio	Current Ratio	Inventory Turnover	Assets Turnover	Current Assets Turnover
2016-2017	**0.612**	**0.546**	**0.056**	0.045	**0.056**	**0.050**
2016-2018	0.001	<0.001	<0.001	0.005	**0.562**	**0.256**
2016-2019	0.038	<0.001	<0.001	<0.001	<0.001	<0.001
2016-2020	**0.111**	0.025	<0.001	<0.001	<0.001	<0.001
2016-2021	**0.942**	<0.001	<0.001	<0.001	<0.001	<0.001
2017-2018	0.007	<0.001	0.001	**0.419**	**0.184**	**0.412**
2017-2019	**0.117**	<0.001	<0.001	0.006	<0.001	**0.101**
2017-2020	0.036	**0.101**	0.011	**0.065**	<0.001	0.012
2017-2021	**0.664**	<0.001	0.012	<0.001	<0.001	<0.001
2018-2019	**0.256**	**0.530**	**0.454**	**0.055**	<0.001	0.014
2018-2020	<0.001	0.016	**0.484**	**0.299**	<0.001	<0.001
2018-2021	0.002	**0.664**	**0.469**	<0.001	<0.001	<0.001
2019-2020	<0.001	0.002	**0.147**	**0.378**	**0.646**	**0,385**
2019-2021	0.045	**0.288**	**0.141**	**0.134**	**0.885**	<0.001
2020-2021	**0.096**	0.048	**0.981**	0.017	**0.546**	0.004

Source: own research

The unmarked values differ substantially from the predetermined significance level, as shown in Table 5. This implies that the null hypothesis is rejected in such circumstances, while the alternative hypothesis is accepted. For the remaining pairings, therefore, no statistically significant distinction can be observed when examining the outcomes of the indicators.

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4.2. Graphical representation of calculated statistical values through paired comparison using Friedman's test

Graphical representation of individual results achieved through pairwise comparison by the Friedman test is captured in the following figures.

The graphical representation captures individual years compared for each indicator. The green colour of the line indicates that in the respective pairwise comparison, there are no significantly different values, meaning that the given pair is not significantly different from each other. Alternatively, the indicator did not acquire significantly different values in the observed years.

The blue colour of the line indicates that in the respective pairwise comparison, there are significantly different values, making it the colour for the alternative hypothesis.

Figure 4: Pairwise comparison of selected liquidity indicators through paired comparison
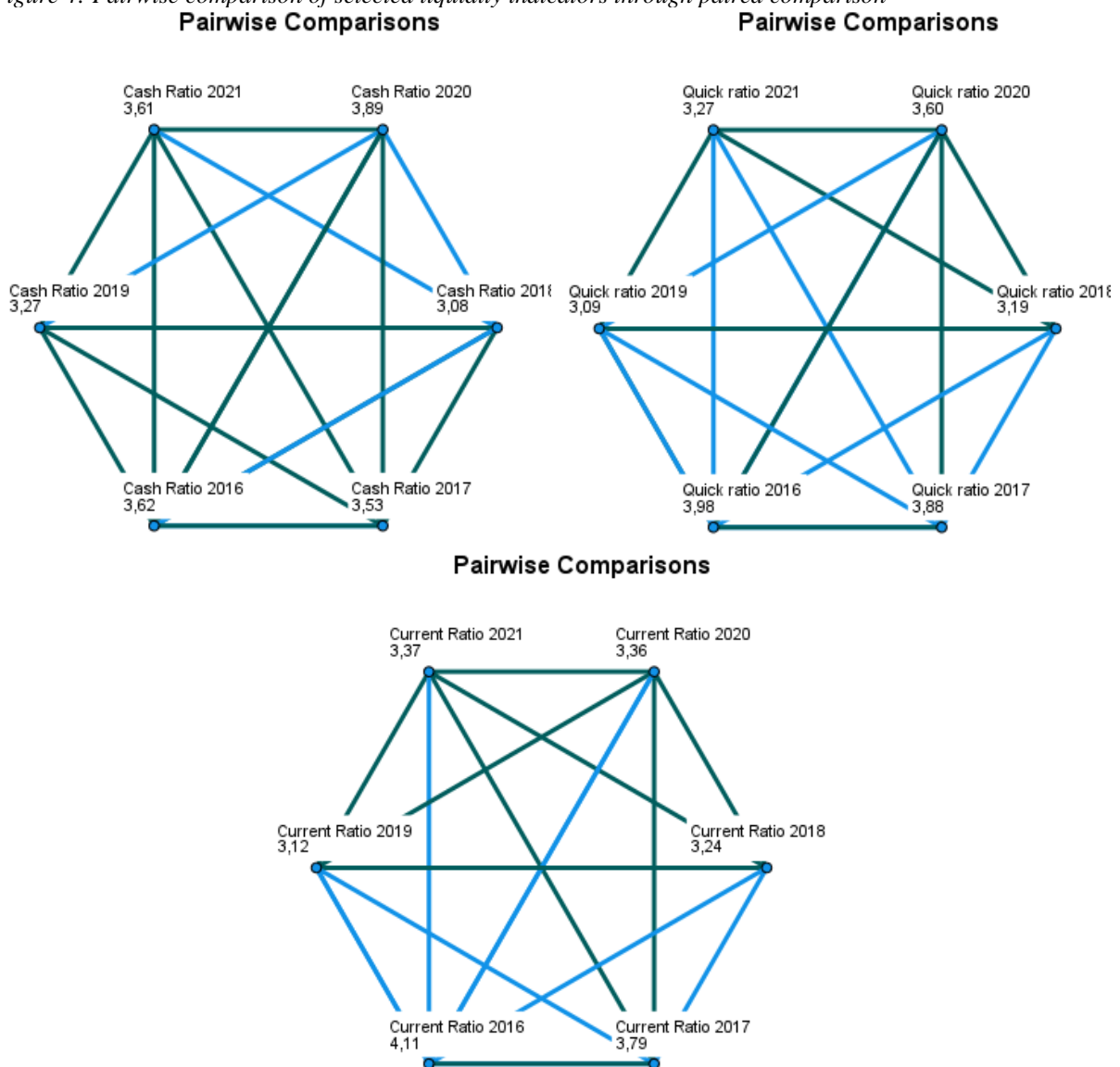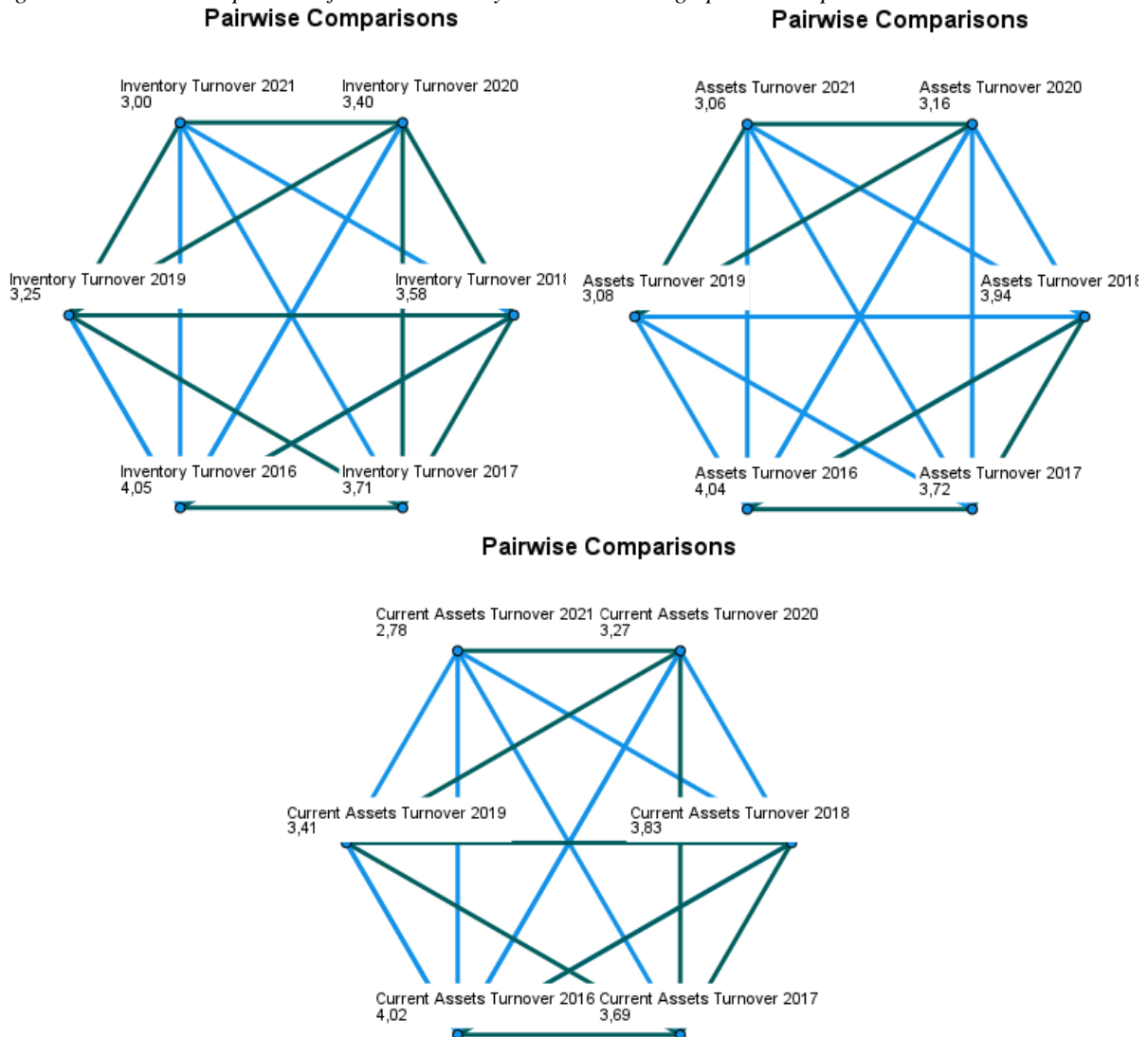

Source: own research

Similarly, we compared selected activity indicators. Once again, we maintained the colour meanings, where a green line signifies that there are no significantly different values in the

paired comparison, representing the null hypothesis. In the case of a blue line, it indicates the presence of significantly different values, representing the alternative hypothesis.

Figure 5: Pairwise comparison of selected activity indicators through paired comparison

Source: own research

When we focused on the connection between liquidity and business activity in the Visegrad Group, we found that it can be influenced by various factors. Among these factors may include (i) a variety of legislative and regulatory measures may have an impact on the operations management and liquidity of enterprises in the Visegrad Group countries; (ii) phases of economic cycles, including periods of expansion, contraction, or stabilization, can exert a substantial influence on the operational and financial standing of enterprises; (iii) the banking sector's credit accessibility and the state of financial markets may have an impact on businesses; (iv) foreign investment inflows and outflows have the potential to impact the liquidity and operational activities of companies affiliated with the Visegrad Group; (v) the degree of confidence that investors and businesses have in the political environment may have a significant impact on their levels of liquidity and operational engagements; (vi) trade relations and commodity price fluctuations are just two examples of how global macroeconomic trends can affect the business environment; (vii) advancements in technology and innovations have the potential to impact the operational effectiveness of businesses as well as their capacity to

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oversee activities and liquidity; and (viii) changes in consumer behaviour and demographic developments may have an impact on the liquidity and operations of businesses.

Additionally, it is critical to note that the Visegrad Group as a whole places considerable emphasis on country-specific macroeconomic indicators. Hence, in order to elucidate the effect of macroeconomic indicators on the activities and liquidity of the businesses comprising this group, the facts may include (i) business law encompasses a set of regulations and laws that dictate the formation and functioning of organizations; this includes commercial contracts, registration, licenses, and bankruptcy law procedures; (ii) employment law encompasses a range of regulations that govern contractual agreements, working conditions, contributions, and employment relationships; these laws establish duties for employers and safeguard the rights of employees; (iii) tax systems and regulations pertaining to fiscal regulation govern income taxes, VAT, and additional levies; businesses may experience an effect on their expenses and profits due to fiscal regulation; (iv) legal protections are in place for consumers, and consumer rights, product labelling, and dispute resolution procedures are all governed by these regulations; (v) environmental regulation consists of legislation that tackles a range of concerns, such as the management of refuse, emission standards, and the safeguarding of nature; (vi) regulations that protect client interests and ensure the stability of the financial system are in place to govern the banking and financial sector; (vii) investments in the digitization of public services and e-government are made gradually. Electronic citizen identification, online services, and electronic forms are all included; (viii) legislation, including patents, intellectual property protection, and tax incentives for research and development, may foster an environment conducive to innovation.

5. Discussion

The research findings initiate a substantial discourse among scholars in the field, stimulating an examination of diverse viewpoints and possible directions for additional inquiry. When contrasting our findings with those of other scholars, it is imperative to recognise the distinctive circumstances of our research, which centred on the economic dynamics of the V4 nations.

To begin with, the unforeseen pattern observed in 2020, wherein a considerable percentage of indicators exhibited values surpassing expectations, calls into question established beliefs regarding the pandemic's effect on enterprises. This discovery compels us to examine the unique socioeconomic circumstances of the V4 region, which may deviate from worldwide patterns. Prominent academics, including Siekelova et al. (2019) and Crhova et al. (2016), have investigated comparable economic transformations within distinct settings, placing significant emphasis on the influence of regional factors on monetary results.

By contrasting the years 2016–2019 with the following year, 2020, a temporal dimension is added to the discussion. Our observation is consistent with the findings of Suler and Machova (2020), who documented significant economic expansion in the V4 countries during 2019. This underscores the importance of historical trajectories in comprehending fluctuations in the economy. However, alternative explanations for economic shifts during this time period are proposed by Valaskova et al. (2020), who emphasize the significance of geopolitical factors.

In preparation for the future, Dutta (2023)'s suggested research agenda is consistent with our strategy to integrate metrics for profitability and debt. Gajdosikova et al. (2023) concur with the notion that indicators of indebtedness may provide insightful information regarding the financial strategies implemented by companies amidst the pandemic. Furthermore, Markova and Svihlikova (2019) emphasize the interdependence of liquidity, activity, and indebtedness,

arguing that a thorough examination of these elements is crucial for comprehending the dynamics of profitability.

In summary, the results obtained from this research make a significant contribution to the continuous dialogue surrounding economic indicators. Through active collaboration with fellow scholars, our objective is to contribute to the scholarly dialogue and stimulate additional inquiries concerning the complex dynamics of financial metrics, particularly as they pertain to unparalleled worldwide occurrences such as the COVID-19 pandemic.

6. Conclusions

The findings from the Friedman test indicate that a significant proportion of indicators (66 percent) attain significance values surpassing the predetermined level of significance between 2019 and 2020. This discovery is noteworthy, given that the year 2020, which is characterised by the pandemic, is anticipated to demonstrate the most distinctive values in comparison to other years. This, surprisingly, does not hold true. It is possible that businesses did not perceive adverse effects from the economic measures implemented to contain the spread of COVID-19 during the pandemic. Nevertheless, significant observations emerge when analysing the period spanning from 2016 to 2019, during which each chosen indicator experiences a substantial fluctuation in value. Comparatively to the preceding year, the economies of V4 nations exhibited substantial growth in 2019. The reason for this is that the economies entered a phase of expansion, which caused the individual indicator values to increase substantially. Enterprises were flourishing, and had it not been for the repercussions of the worldwide pandemic in 2020, we contend that year would have stood out supremely among the years that have been observed. The findings presented in this scientific article offer novel perspectives that will significantly enhance subsequent investigations, specifically in regard to monitoring the progression of these metrics in the forthcoming period, specifically until 2022. Our objective is to further develop this research in the future by incorporating profitability and indebtedness indicators. We are convinced that indicators of indebtedness will produce intriguing values, particularly given the fact that numerous businesses were compelled to borrow funds in order to maintain their market position throughout the pandemic. Costs incurred as a result of forced business closures were not offset by revenues since organisations were unable to carry out their routine operations. Additionally, the interaction of activity, indebtedness, and liquidity indicators will offer an intriguing vantage point for profitability indicators. Indicators of profitability reflect the collective endeavours of organisations to attain their primary objective of producing financial gain. However, the interrelated dynamics of liquidity, activity, and indebtedness indicators have had a substantial influence on profitability indicators amidst the pandemic.

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