SemeAd 2023
XXVI Seminários em Administração

07, 08, 09 e 10 de novembro de 2023
ISSN 2177-3866

Comparative analysis of return and profitability between brazilian cyclical and non-cyclical consumer companies, before and after the beginning of the russian-ukrainian war

LETÍCIA DRUMMOND REZENDE
UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)

ANTÔNIO ARTUR DE SOUZA
UNIVERSIDADE FEDERAL DE MINAS GERAIS (UFMG)

Agradecimento à orgão de fomento:
Agradecemos à CAPES pelo financiamento desta pesquisa via bolsa de doutorado.

COMPARATIVE ANALYSIS OF RETURN AND PROFITABILITY BETWEEN BRAZILIAN CYCLICAL AND NON-CYCLICAL CONSUMER COMPANIES, BEFORE AND AFTER THE BEGINNING OF THE RUSSIAN-UKRAINIAN WAR

1 INTRODUCTION

1.1 Research Problem and Objective

In early 2022, when Brazil and the world were still fighting the Covid-19 pandemic, but with lower rates of contagion and deaths due to the mass vaccination promoted globally, Russia invades Ukraine on February, 24th, 2022. The conflict had started in 2014, when the Russians seized Crimea (Ukraine's territory), and was intensified when Ukraine expressed its intention to join the North Atlantic Treaty Organisation (NATO), representing an economic and political threat to Russia, since Ukraine is strategically located on a maritime trade route of Russian interest (Dellagnezze, 2022).

At the global level, Alam, Mosab, Tabash, Billah, Kumar and Anagreh (2022) state that the conflict between Russia and Ukraine has had and will still have negative economic consequences, such as the estimated 1% reduction in global GDP over the year 2023 (World Bank, 2022), representing an estimated $1 trillion drop. The war will add nearly 2-3 per cent to global net inflation (World Bank, 2022), and the fact that Ukraine and Russia are major suppliers of commodities such as wheat, titanium, corn, etc. on the world stage, will generate further economic complexities regarding these commodities. The conflict may also jeopardise the supply of smartphones, aircraft and other similar products, driving up prices (Alam et al., 2022). The war between Ukraine and Russia has also intensified monetary policy, damaging business confidence and overall consumer demand, which was already at its lowest level due to Covid-19-induced price increases (Alam et al., 2022). The authors expect this conflict to increase economic damage on both sides in the future due to the disruption of trade flows, causing shortages in the food value chain (production, processing, packaging, storage, transport, retail sales and logistics costs).

An article in the FINDE Bulletin (of the Research Group on Financialisation and Development) reports that since the beginning of the invasion of Russian troops into Ukrainian territory, US President Joe Biden has led sanctions that have had economic impacts not only on Russia, but on the entire global economy (Leal, & de Paula, 2022). Among these sanctions were the freezing of part of the foreign exchange reserves (about US$300 billion of the country's US$630 billion reserves) and the exclusion of Russian banks from the SWIFT (Society for Worldwide Interbank Financial Telecommunication) - system of payments between financial institutions - coordinated by the central banks of the world's ten largest economies, and freezing the assets of the Russian central bank, leading it to raise its interest rate from 9.5 per cent to 20 per cent four days after the beginning of the war (Leal, & de Paula, 2022; Lo, Marcelin, Bass`ene, & S`ene, 2022). The Organisation for Economic Co-operation and Development (OECD) also terminated Russia's accession process and maintained international sanctions (Lo et al., 2022).

In Brazil, the situation became more critical with its economy already stagnating since the 2015-2016 recession, when GDP had not recovered since 2014 (Monteiro, Feijo, & D'Agostini, 2022). GDP in 2021 reached the level of 2019, but remained lower than in 2014. This stagnation was offset by the deterioration in labour market conditions since 2016, which according to the Brazilian Institute of Geography and Statistics (IBGE), showed double-digit unemployment rates (Monteiro et al., 2022). As a result, the Central Bank of Brazil (BACEN) pointed out that the level of household indebtedness rose from 42.1% in March 2020 (when the Covid-19 pandemic began) to 51.9% in November 2021 (Monteiro et al., 2022).

Regarding the Brazilian stock market (companies listed on the Brasil Bolsa Balcão - B3), Pandini, Stüpp and Fabre (2018) report that one of the sectors most vulnerable to macroeconomic variations is cyclical consumption (production and commercialisation of durable goods related to the subsectors of civil construction, textiles, clothing and footwear, household utilities, automobiles and motorbikes, hotels and restaurants, travel and leisure, miscellaneous and trade) (Teixeira, Oliveira, Santos, & Ferreira, 2022). The authors explain that the revenues of companies in this sector are directly affected by fluctuations in the economy, especially in periods of economic recession or expansion, since turnover varies with the level of consumer income in the short term. Another group whose economic activity is the production and/or commercialisation of consumer goods is the non-cyclical consumption sector (non-durable consumer goods, such as food, beverages, cleaning and hygiene materials, agricultural subsectors, trade and distribution) considered more essential (Pandini et al., 2018; Teixeira et al., 2022), which may be less impacted by macroeconomic variations, as they do not suffer the effect of income elasticity, even with variations in the population's income.

The study by Teixeira et al. (2022) comparatively analysed the performance of liquidity, indebtedness and profitability indicators of companies in the cyclical and non-cyclical consumption sectors in the three-year periods 2009-2011; 2012-2014; 2015-2017; and 2018-2020. The results found corroborate the statement by Pandini et al. (2018), showing that the cyclical consumer sector was more affected, with significant reductions in General Liquidity and Dry Liquidity, as well as Net Margin, EBITDA Margin, Returns on Assets (ROA) and Returns on Equity (ROE) between 2012-2014 and 2015-2017, indicating that in periods of crises the cyclical consumer sector is more affected by economic fluctuations.

In this scenario of the war between Russia and Ukraine, and its impact on the Brazilian economy and specifically on the results of national cyclical and non-cyclical consumer companies, this paper aims to analyse the effects of the Russian-Ukrainian war on the return and profitability of companies in the sectors classified as cyclical and non-cyclical on B3, grouped by sector, in the period between January/2022 and June/2022. To this end, the research question proposed is: **What is the intensity of the impacts of the Russian-Ukrainian war on the return and profitability of Brazilian publicly traded companies, classified in the cyclical and non-cyclical sectors, before and after the beginning of the conflict?**

2 THEORETICAL BACKGROUND

2.1 Impacts of the War in Ukraine on Stock Markets

The impacts of the Russian-Ukrainian War (RUW) on international stock markets are widely researched, such as the study by Boungou and Yatié (2022) which analyses the effects of this war on the stock markets of 94 countries between 01/22/2022 and 03/24/2022 from four perspectives: (i) the impact of the war on stock market returns; (ii) the evolution of the responses of this market since the invasion and several weeks after; (iii) divergence of effects according to the geographical proximity of Ukraine and Russia; and (iv) divergence of stock market responses between neutral countries and those that condemned the invasion. The results indicated a negative and statistically significant relationship between the war and the performance of world stock market indexes, with a significantly greater impact from the moment of the invasion. When assessing the intensity of the impact on countries geographically close to Ukraine and Russia, the authors found that stock market indexes in these countries were more affected by the war. Finally, they observed a negative stock market reaction for both countries that condemned the invasion and those that remained neutral.

In world markets, the war is expected to have effects on the global economy and specifically on inflation, due to increased uncertainty and risks of severe adverse outcomes (Dario, Conlisk, Iacoviello, & Penn, 2022). Some of these effects have already materialised,

such as the contraction of the Russian and Ukrainian economies through the sanctions imposed on Russia. Commodity markets are in turmoil and financial markets have experienced high volatility since the beginning of the conflict. For Dario et al. (2022), the adverse effects of geopolitical risks suggest that the impact on European economies is likely to be greater, especially in goods-producing sectors. As they see it, the economic effects of the conflict will vary by type of sector, being more concentrated in goods-producing sectors (cyclical consumption), which were already facing bottlenecks before the invasion. Meanwhile, sectors less affected by supply disruptions (non-cyclical consumption) express less concern about the war.

The British agency Reuters (Reuters, August/2022) corroborates that such recessions have hit critical commodities such as gas prices, essential in European households and industries, which have more than tripled since June/2022, and will possibly lead to future energy rationing. Against this backdrop, the European Central Bank, the Bank of England and other central banks are trying to bring down inflation driven up by high energy costs, even as they push interest rates higher (Reuters, August/2022). Rising energy and food prices, coupled with post-pandemic supply chain tensions, had already pushed inflation rates around the world to levels last seen in the 1970s; this boosted borrowing costs and default concerns, leading to the euro's sharp fall in 2022, greater than any period since its introduction in 1999 (Reuters, August/2022).

Also, according to Reuters, European stock markets in Germany and Italy were the worst performers in 2022, as were Poland and Hungary. Indicators of market volatility, from stocks and bonds to oil and the euro-dollar exchange rate, spiked after the invasion of Ukraine, but have bounced back as energy and recession worries have risen again (Reuters, August/2022). Ukraine defaulted as its economy and finances were destroyed, and sanctions led Russia to its first sovereign debt default in decades, with over $25bn of corporate debt (Reuters, August/2022).

The paper of Lo et al. (2022) analysed the impact of RUW on 73 countries, whose economies are conditioned on dependence on Russian commodities, and the results showed that financial markets reacted to the conflict by decreasing asset returns and increasing volatility. The authors state that financial markets perceive dependence on Russian commodities as a risk factor for declining returns and increased instability. Three factors originating from the war that have an effect on financial markets were identified by Lo et al. (2022): (i) the interrelationship of the oil market between the European Union (EU) and Russia; (ii) the dependence of economies on Russian commodities; (iii) disruptions in the global supply chain, as Russia and Ukraine are the world's leading producers of metals employed in sectors such as nickel and palladium.

The OECD report (OECD, 2022) reaffirms the impact of RUW on the decline in economic growth and its negative effects on financial markets and institutions. The organisation based its analysis on demand and supply chain disruptions in the post-Covid-19 environment, prior to Russia's invasion of Ukraine, concluding that they contributed to substantial increases in commodity prices and input costs; and subsequently, rising inflationary pressures caused several central banks to start raising their interest rates. Since the end of February 2022, conditions in corporate and sovereign credit markets have deteriorated substantially beyond the Russian market, particularly in emerging countries in Europe and Asia.

The combination of geopolitical uncertainty, higher commodity prices, sanctions and regional business disruptions contributed to increased volatility and risk aversion (OECD, 2022). After an initial deterioration in risk appetite following the Russian invasion of Ukraine, global equity market performance and credit market conditions have improved since mid-March 2022 as investors reassessed their outlook for risky assets and became less risk averse;

however, high commodity prices risk further fuelling inflationary upswings around the world, eroding purchasing power and corporate profits, and increasing financial risks (OECD, 2022).

2.2 Cyclical and Non-Cyclical Consumer Enterprises in Adverse Economic Environments

For Assaf Neto (2019), the cyclical company has a strong correlation between its expected cash flows and the behaviour of economic cycles. For the author, Wesley Clair Mitchell, one of the first scholars to publish on economic cycles, believed that there were sectors in which companies were more sensitive to economic cycles, while other companies less affected by macroeconomic variations were classified as non-cyclical consumption. Cardoso and Pinheiro (2020) agree with that when they state that cyclical sectors are more sensitive to events of economic expansion or recession. This direct relationship with economic expansion is due to the short-term response to changes in income. Thus, these firms are vulnerable to economic downturns, events during which they sell less. On the other hand, non-cyclical sectors are not as exposed to economic fluctuations, as they produce inelastic goods, such as goods linked to health or with natural monopoly characteristics (electricity, fixed telephony, gas, water and sanitation), and therefore do not tend to suffer due to changes in income (Cardoso & Pinheiro, 2020).

B3 (B3, 6/4/2023) confirms these definitions of cyclical companies, classifying them as those most affected by economic cycles, such as fluctuations in economic indexes and factors, changes in inflation and interest rates. They tend to perform better in positive economic scenarios, when consumption is boosted. These companies can be affected by their own cycles, like commodity companies. In times of economic downturn, they may show losses due to the strong exchange rate effect on their balance sheets. On the other hand, in times of expansion, they are great dividend payers due to high cash flow generation. Some examples of cyclical companies are those in the retail, technology, meatpacking and construction sectors. On the other hand, non-cyclical companies are those that are not so affected by the economic cycle, since they have relatively constant demands; this is because they produce necessary goods, presenting greater resilience in adverse economic scenarios (B3, 6/4/2023). Examples of this sector are banks, energy, sanitation, health, insurance and telecommunications companies (B3, 6/4/2023).

Fabrício Gonçalvez, CEO of Box Asset Management, states that the advantages of cyclical companies include the possibility of obtaining higher returns in times of economic expansion, in addition to having the possibility of acquiring assets at lower prices during economic recessions (B3, 6/4/2023). Disadvantages include greater volatility of their earnings and cash flow, and greater need for continuous investment to remain competitive. The advantages of non-cyclical companies include the stability of their earnings and cash flow, and lower need for continuous investments (B3, 6/4/2023). Disadvantages include the lower possibility of higher returns in times of economic expansion and the lack of opportunities to acquire assets at lower prices during economic downturns (B3, 6/4/2023).

2.3 Measuring Return and Profitability

According to Farasi (2022), financial indicators are very important to analyse the financial condition of a company. The use of financial indicators to measure the performance of a business varies depending on the aspect being assessed. The author states there are five types of financial indicators that are often used to assess the financial condition and financial performance of a business, among them return and profitability (Farasi, 2022). Profit margin reflects the ability of a company to generate profit based on sales (Brigham & Houston, 2012), being an important indicator since a significant decrease in sales can generate the risk of bankruptcy (Husna & Desiyanti, 2016). Imhanzenobe (2020) showed that profit margin is a short-term performance indicator (reflecting the firm's net revenue per unit of sales). Tudose,

Rusu and Avasilcai (2022) recognise that profit margin management can prevent or anticipate profit decline, with a positive future effect on the firm by controlling competitiveness and minimising the risk of bankruptcy.

Performance measurement based on the rate of profit increase marked the transition from static to dynamic measurement of financial performance. The rate of profit growth was associated with the rate of company growth (increase in sales) (Tudose et al., 2022). A profitability proxy used in the measurement of corporate financial performance is the EBITDA Margin, described in the study by Andrade, Oliveira, Santos, Oliveira and Silva (2020), as the percentage of net income, without the incidence of deductions related to interest, taxes, depreciation and amortisation. The EBTIDA margin is relevant for analysts to evidence profitability and intercompany comparisons (Ritta, Jacomossi, Fabris, & Klann, 2017). Profitability is commonly used to assess a firm's ability to make a profit within a given period of time and is closely related to its development (Farasi, 2022).

Financial performance has other dimensions such as return and growth (Venkatraman & Ramanujam, 1987). Return can be measured by proxies such as return on total assets (ROA), return on equity (ROE) and return on investment (ROI). Halkos and Tzeremes (2012) corroborate that the financial performance of companies can be expressed by their level of ROA and ROE. Andrade et al. (2020) state that the return on equity (ROE) shows the company's value added based on the investments made (Assaf Neto, & Lima, 2017; Matarazzo, 2010), and is considered a classic proxy for measuring return. Vieira, Santos, Lagioia, Vieira and Santos (2014) corroborate this relevance, stating that ROE is one of the most important proxies according to shareholders. Among the measures to determine the economic efficiency and financial performance of a company, Hassan (2019) cites earnings per share (EPS), ROA, ROE and return on invested capital (ROIC).

Tudose et al. (2022) state that the most commonly used rates of return in finance studies are ROA and ROE as they indicate the efficiency of a firm in the use of its resources and funds. The authors also include the return on investment (ROI), which balances net income and the total value of the investment, used to assess the level of efficiency of the company (Siahaan, Sadalia, & Silalahi, 2021). Edan, Hraiga, and Farhan (2022) reaffirm the importance of these rates of return in assessing corporate financial performance, justifying that they determine the efficiency of operational performance and the effectiveness of management. In this sense, sustainable levels of return constitute a barrier against capital erosion during difficult economic conditions, providing protection for shareholders.

3 METHODOLOGY

3.1 Research Delimitation, Population and Sample

Research Delimitation

This research has a descriptive and quantitative approach. According to Gil (2017, p. 27) it is descriptive because it describes the "characteristics of a given population", with the objective of identifying possible relationships between the variables analysed. And quantitative since numerical secondary data will be collected, related to the return and profitability of B3 companies, and analysed by the application of statistical techniques. It is also documentary, since it will use data available in databases and accounting information (Cooper, Schindler, & Sun, 2014) in technical reports made available on the websites of the companies studied.

Quantitative analysis in this type of research is well established in the literature, with John W. Creswell being one of its best known authors. The author defines a quantitative technique as one in which the researcher uses post-positivist claims to develop knowledge or employ research strategies (Creswell, 2007). The quantitative approach will be applied in this work to measure the return and profitability of cyclical and non-cyclical consumer companies

listed on B3, grouped by sector of activity, and the period of analysis being between January 2022 and June 2022. This time interval covers two months prior to the invasion and the month of March 2022 considered the interval prior to the economic effects of the war suffered by the companies; and three months after the invasion, until June 2022, before the start of electoral propaganda in Brazil, which could bias some financial data of the companies, due to the probable influence of the elections on the Brazilian economy.

Population and Sample

The development of this research is based on quarterly financial data from the population of companies listed on B3, whose data were collected in the Refinitiv database and in the documents published by the Investor Relations sector of the websites of the companies surveyed. For the sample, we selected the companies participating in B3, from the cyclical and non-cyclical consumption sectors, classified according to the Refinitiv database itself. The collection period considered was between 1Q2022 and 2Q2022, in order to have equal time intervals, considering the conflict that occurred at the end of February 2022 and the end of March 2022 as the period prior to the first effects felt by economies and companies worldwide. Companies belonging to the financial capital services sector were disregarded from the sample, and therefore differ from other economic sectors in relation to legislation and published data.

3.2 Proxies Definition to Measure Return and Profitability

Assaf Neto and Lima (2017) state that the analysis of financial statements enables the assessment of the organisation's overall performance, allowing the diagnosis of the present situation and the prediction of future trends. The use of indicators is the most commonly used procedure, however, an isolated indicator may not contain significant information, and it is important to measure performance through a set of indicators compared over time and sectorally. Flach and Mattos (2020) analysed some studies on the subject of the financial performance of publicly traded companies and its relationship with the returns of their shares. In those studies, the authors identified indicators and proxies commonly used in the analysis of financial performance, namely:

- liquidity indicators - proxies: dry, current, general, absolute liquidity and working capital;
- average term and turnover indicators - proxies: average sales receipt term, trade receivables turnover, average purchase payment term, accounts payable turnover, average inventory renewal term, inventory turnover, permanent assets, total assets, net worth and operating assets;
- indebtedness indicators - proxies: general indebtedness, long-term debt/equity, long-term capitalisation, third-party capital participation, debt composition, fixed capital, fixed equity, fixed non-current resources, cash flow/total debt, cash flow/long-term financing and third-party capital guarantee;
- return indicators - proxies: return on total assets, return on equity, return on paid-in capital and return on operating investment;
- profitability indicators - proxies: gross margin, operating margin, non-operating margin, net margin, earnings per share (EPS) and price/earnings ratio (P/E).

Considering the literature, for this study there were selected the indicators and their respective proxies, presented in Table 1. All proxies were obtained from Refinitiv and company reports.

Table 1 – Proxies for Assessing Return and Profitability

Proxy	*Proxy* Definition	Formula
	RETURN	
Return on Total Assets (ROA)	Measures management's effectiveness in generating profits from available assets.[1]	$ROA = \frac{\text{Net Profit}}{\text{Current + Non-Current Assets}}$
Return on Equity (ROE)	Measures return on investment, or profit/equity.[1]	$ROE = \frac{\text{Net Profit}}{\text{Net Equity}}$
	PROFITABILITY	
EBITDA Margin	Measures the percentage of each monetary unit sold, after all costs and expenses have been deducted.[1]	$\text{EBITDA Margin} = \frac{\text{EBITDA}}{\text{Net Revenue Operating}}$
EBIT Margin	Measures the company's profitability excluding interest and taxes.	$\text{EBIT Margin} = \frac{\text{EBIT}}{\text{Net Revenue Operating}}$

Prepared by the authors.
Source: [1]Gitman (2010).

3.3 Data Collection

The sample consisted of 96 companies, 63 belonging to the cyclical consumer sector and 33 to the non-cyclical consumer sector, according to the TRBC Economic Sector Name (The Thomson Reuters Business Classification - industry classification of global companies, operated by Thomson Reuters). In order to avoid the influence of individual companies on the result of the overall average of a specific sector, and to ensure that all have data published in Refinitiv for the periods proposed in this study, companies with active CVM status were selected.

3.4 Statistical Analysis

The scientific literature related to the impacts of economic crises on companies confirms their effect on its financial performances, with changes observed in indicators such as indebtedness, liquidity, activity and return (Hall, Beck, & Toledo Filho, 2013; Zeitun, & Saleh, 2015). The significant drop in sales reduces return, profitability and liquidity, since operating costs do not decrease in the same proportion (Avelar, Ferreira, da Silva, & Ferreira, 2021). The measurements corresponding to the objective of this paper were carried out together with the verification of hypotheses because, according to Barbetta (2011), hypothesis testing allows testing the veracity of assumptions (or hypotheses) about the sample of a research, by means of statistical techniques. Hypothesis testing serves to verify whether or not the research data show the proposed hypothesis, with some confidence that the answer found is not random. To this end, the null hypothesis is defined, which consists of denying the researcher's assumption, and the alternative hypothesis (researcher's assumption), accepted when the null hypothesis is rejected. The null and alternative hypotheses considered in this study were:

Ho: null hypothesis = RUW did not impact the return and profitability of the companies in the sample

Ha: alternative hypothesis = RUW did impact the return and profitability of the companies in the sample

To determine whether the null hypothesis should be rejected, T-tests of the difference between the means of the proxies before and after the start of RUW were performed, and the t-values observed in the sample were compared with the respective critical tc values (tabulated). Thus, in a one-tailed test (which is the present case), for each proxy, when the absolute value of t was greater than the critical absolute value (tc), the null hypothesis was rejected, indicating that the start of RUW impacted the proxy in question; otherwise, it was accepted, indicating no impact. Thus, according to Braule (2001):

$$\text{If } |t| > |tc| \Rightarrow \text{reject } H_o$$
$$\text{If } |t| \leq |tc| \Rightarrow \text{do not reject } H_o$$

Another statistical tool that assesses the relevance of the difference between means of paired samples is the comparison of the p-value with the alpha significance level (α), *i.e.,* the probability of rejecting the null hypothesis when it is true. In this work, an α of 5% was considered because it is the value most commonly considered in the literature. Thus:

$$\text{If p-value} \leq \alpha \Rightarrow \text{reject } H_o \text{ (significant)}$$
$$\text{If p-value} > \alpha \Rightarrow \text{do not reject } H_o \text{ (non-significant)}$$

The results and related discussions are presented in the next section.

4 RESULTS ANALYSIS

Tables 2 and 3 present the ROA statistics for cyclical and non-cyclical consumption firms, respectively. From the T-test of means, p-values were obtained for both groups of companies.

Table 2 - ROA of Cyclical Consumer Companies

ROA (cyclical)	1Q22	2Q22
Mean	2.7%	3.0%
Variance	1.3%	1.2%
Observations	61	61
Mean difference hypothesis	0	
df	60	
Stat t	-0.459245285	
P(T<=t) single-tailed	0.323858789	
single-tailed critical t	1.670648865	

Source: Prepared by the authors.
Note: α = 5%

Table 3 – ROA of Non-Cyclical Consumer Companies

ROA (non-cyclical)	1Q22	2Q22
Mean	7.2%	6.2%
Variance	0.39%	0.31%
Observations	30	30
Mean difference hypothesis	0	
df	29	
Stat t	1.689962881	

P(T<=t) single-tailed	0.050879422
single-tailed critical t	1.699127027

Source: Prepared by the authors.
Note: α = 5%

Looking at Table 2, we find that | t | = 0.46 ≤ | tc | = 1.67 and p-value = 0.32, indicating that the difference between the ROA means before and after Russia's invasion of Ukraine is not statistically significant, and Ho should be considered true, *i.e.,* the ROAs of cyclical consumer companies after the first 4 months of the start of RUW were not impacted compared to the first 3 months of the year 2022. In relation to the results of Table 3, we have | t | = 1.68 ≤ | tc | = 1.69 and p-value ≈ 0.050, and therefore indicating that the difference between the means of ROA before and after the conflict is at the limit of statistical significance, but as the observed t is practically equal to the critical one, Ho should be considered true, that is, the ROAs of non-cyclical consumption companies after the first 4 months of the start of war were not significantly impacted in relation to the first 3 months of the year 2022.

These results show that, statistically, there were no significant differences between the average returns on assets of the sample firms before and after the start of the invasion on Ukraine. This reflects the same result found in the study by Boungou and Yatié (2022), in which the authors concluded that the economies (and firms) of countries geographically further away from the war region suffered smaller impacts than countries closer to it, mainly due to the more intense trade relations between the countries in the same region.

Tables 4 and 5 present ROE statistics for cyclical and non-cyclical consumption firms, respectively, following the same analysis process as for ROA. A difference to be noted here is the reduction of the sample data due to two factors: (i) absence of data for some firms in both groups, and (ii) discrepant point values of the sets of firms, which would cause significant interference in the statistical evaluations.

Table 4 – ROE of Cyclical Consumer Companies

ROE (cyclical)	1Q22	2Q22
Mean	10.0%	9.0%
Variance	1.8%	1.8%
Observations	42	42
Mean difference hypothesis	0	
df	41	
Stat t	2.306673366	
P(T<=t) single-tailed	0.013100411	
single-tailed critical t	1.682878002	

Source: Prepared by the authors.
Note: α = 5%

Table 5 – ROE of Non-Cyclical Consumer Companies

ROE (non-cyclical)	1Q22	2Q22
Mean	16.0%	14.2%
Variance	2.5%	2.1%
Observations	24	24
Mean difference hypothesis	0	
df	23	
Stat t	2.405309809	

P(T<=t) single-tailed	0.012299856
single-tailed critical t	1.713871528

Source: Prepared by the authors.
Note: α = 5%

In Table 4 | t | = 2.30 > | tc | = 1.68 and p-value = 0.01, indicates that there is a difference between the ROE means before and after Russia's invasion of Ukraine, statistically significant, and Ho should be rejected, *i.e.,* the ROEs of cyclical consumer companies after the first 4 months of the start of the conflict were impacted compared to the first 3 months of the year 2022. Regarding the results in Table 5, | t | = 2.40 > | tc | = 1.71 and p-value = 0.01, also indicate a significant difference between the ROE averages before and after the conflict, and Ho should be rejected, *i.e*., the ROEs of non-cyclical consumption companies after the first 4 months of the start of the GR-U were also impacted compared to the first 3 months of the year 2022.

These results show that, statistically, there were differences between the average returns on equity of the sample firms when comparing the periods before and after the start of RUW. This result goes in the opposite direction to the findings of Boungou and Yatié (2022). Considering the discussion on return, from its calculated ROA and ROE proxies, it can be thought that although the war did not cause significant impacts on Brazilian cyclical and non-cyclical consumer companies in relation to their return on assets, in the first months following the invasion, it negatively impacted returns on equity (observing the drop in the averages of both groups in 2Q22), by reducing the profit in relation to the companies' equity.

Tables 6 and 7 present the EBITDA Margin statistics for cyclical and non-cyclical consumer companies. As with the ROE analyses, here too there was a reduction in the sample data due to the absence of data for some companies in both groups, or the occurrence of discrepant point values from the sets of companies, which would cause significant interference in the statistical evaluations.

Table 6 – EBITDA Margin of Cyclical Consumer Companies

EBITDA Margin (cyclical)	1Q22	2Q22
Mean	11.2%	11.2%
Variance	0.7%	0.9%
Observations	48	48
Mean difference hypothesis	0	
df	47	
Stat t	-0.01642	
P(T<=t) single-tailed	0.493484	
single-tailed critical t	1.677927	

Source: Prepared by the authors.
Note: α = 5%

Table 7 – EBITDA Margin of Non-Cyclical Consumer Companies

EBITDA Margin (non-cyclical)	1Q22	2Q22
Mean	11.5%	14.1%
Variance	1.1%	1.0%
Observations	25	25
Mean difference hypothesis	0	
df	24	
Stat t	-3.4437	

P(T<=t) single-tailed	0.001059
single-tailed critical t	1.710882

Source: Prepared by the authors.
Note: α = 5%

In Table 6 | t | = 0.016 ≤ | tc | = 1.67 and p-value = 0.49, indicating that Ho should not be rejected, *i.e.,* the EBITDA margins of cyclical consumption companies after the first 4 months of the start of RUW were not impacted compared to the first 3 months of the year 2022. The results of Table 7, | t | = 3.44 > | tc | = 1.71 and p-value = 0.001, indicate that Ho should be rejected, as there is a statistically significant difference between the averages of the EBITDA margins of non-cyclical consumption companies, so that the war impacted their profitability concerning this proxy.

Tables 8 and 9 present the EBIT Margin statistics for cyclical and non-cyclical consumption firms. There was a greater reduction in the data for the sample of cyclical consumption companies, due to the absence of data, or the occurrence of discrepant point values of the sets of companies, which would cause significant interference in the statistical evaluations.

Table 8 –EBIT Margin of Cyclical Consumer Companies

EBIT Margin (cyclical)	1Q22	2Q22
Mean	5.9%	6.6%
Variance	1.0%	1.1%
Observations	49	49
Mean difference hypothesis	0	
df	48	
Stat t	-0.85609	
P(T<=t) single-tailed	0.198102	
single-tailed critical t	1.677224	

Source: Prepared by the authors.
Note: α = 5%

Table 9 – EBIT Margin of Non-Cyclical Consumer Companies

EBIT Margin (non-cyclical)	1Q22	2Q22
Mean	10.1%	11.1%
Variance	2.8%	1.4%
Observations	28	28
Mean difference hypothesis	0	
df	27	
Stat t	-0.61581	
P(T<=t) single-tailed	0.27159	
single-tailed critical t	1.703288	

Source: Prepared by the authors.
Note: α = 5%

Table 8 shows | t | = 0.85 ≤ | tc | = 1.67 and p-value = 0.19, indicating that Ho should not be rejected, and therefore the EBIT margins of cyclical consumption companies after the first 4 months of the start of invasion did not suffer significant impacts compared to the first 3 months of the year 2022. Regarding the results of Table 9, | t | = 0.61 ≤ | tc | = 1.70 and p-value = 0.27, these also point out that Ho should not be rejected, and therefore there was no impact

of the conflict on the EBIT margins of non-cyclical consumer companies in the first 4 months after the invasion.

Thus, in relation to the profitability of Brazilian cyclical and non-cyclical consumption firms, considering the results obtained from EBITDA and EBIT Margins, it can be said that this indicator was not impacted by the war, except for the EBITDA Margins of non-cyclical consumption firms. This result reflects the literature that states that this type of company tends to maintain its demand even in adverse economic environments, since they produce and commercialise products that meet basic needs, such as food, beverages, medicines and hygiene products.

5 CONCLUSION AND CONTRIBUTION

The analyses of the results of the present study showed that the answer to the initial research question, regarding the intensity of the impacts of the Russian-Ukrainian war on the return and profitability of Brazilian cyclical and non-cyclical consumer companies, is that, in relation to return, there was no statistically significant impact on ROA, but there was on ROE for cyclical and non-cyclical consumer companies, which had decreases respectively of 1.0% and 1.8% between their averages before and after the beginning of the invasion. This result may indicate that due to high inflation and difficulties in importing Russian products critical for Brazilian production, domestic production costs increased, reducing profits and return on equity.

Regarding the profitability of the companies in the sample, the answer to the research question is that there was a significant impact only on the EBITDA Margin of non-cyclical consumption companies, with an average increase of 2.6%. This result corroborates what the literature states about the greater resilience of this type of company in scenarios of relevant economic changes, since the demands for their products/services tend to remain constant, as they are essential items.

Among the limitations of the present study are the absence of some data in the Refinitiv database itself, which changed the number of sample observations, in some cases significantly, such as ROE and EBITDA Margin. Another limitation was the short time interval of analysis that may not represent the entire scenario of the impact of the war on companies, since the effects on economic variables such as inflation, GDP, trade balance, etc. may take prolonged periods of time to have their effects observed on companies' results. As a contribution, this paper helps to understand the impact of a war event that caused crises in the economies of several countries, with different effects and intensities, and which, due to globalisation, may have cross-impacts. It also contributes to the understanding of the impacts of these effects on the financial performance of regional companies, even far from the site of the conflict.

A first suggestion for future research is to consider more proxies for return and profitability indicators, which enriches the analyses and deepens the understanding of the behaviour of these indicators in economic crisis scenarios. Studies can also be carried out with other financial indicators to portray in greater detail the performance of companies in this scenario, as well as to include the other business sectors, to understand their financial performances. A final suggestion is the continuity of this study, since the RUW is still ongoing and other effects on economies can be measured from its beginning to the present moment.

BIBLIOGRAPHICAL REFERENCES

Alam, K., Mosab I., Tabash, M. I., Billah, M, Kumar, S., & Anagreh, S. (2022). The Impacts of the Russia–Ukraine Invasion on Global Markets and Commodities: A Dynamic

Connectedness among G7 and BRIC Markets. *J. Risk Financial Manag*., *15*, 352. https://doi.org/10.3390/jrfm15080352.

Andrade, G. C. T., Oliveira, E. R., Santos, G. C., Oliveira, E. D., & Silva, A. T. (2020). Análise do desempenho econômico-financeiro de três empresas de capital aberto do setor de construção civil (2009-2018). *DESENVOLVE - Revista de Gestão do Unilasalle, 9(2),* p. 119-137. http://dx.doi.org/10.18316/desenv.v9i2.6510.

Assaf Neto, A., Lima, F. G. (2017). *Fundamentos de Administração Financeira.* 3ed. São Paulo, Atlas.

Assaf Neto, A. (2019). *Valuation: Métricas de Valor & Avaliação de Empresas.* 2ed. São Paulo, Atlas.

Avelar, E. A., Ferreira, P. O., da Silva, B. N. E. R., & Ferreira, C. O. (2021). Efeitos da Pandemia de Covid-19 sobre a Sustentabilidade Econômico-Financeira de Empresas Brasileiras. *RGO - Revista Gestão Organizacional, 14*(1), 131-152.

B3. Empresas Cíclicas e Não-Cíclicas: o que são e como diferenciar. João Paulo dos Santos. 06/04/2023. Recuperado de: https://borainvestir.b3.com.br/noticias/empresas/empresas-ciclicas-e-nao-ciclicas-o-que-sao-e-como-diferenciar/.

Barbetta, P. A. (2011). *Estatística Aplicada às Ciências Sociais.* 7 ed. Florianópolis: UFSC.

Boungou, W., & Yatie, A. (2022). The impact of the Ukraine-Russia war on world stock returns. *Econ. Lett. 215*, 110516.

Braule, R. (2001). *Estatística Aplicada com Excel: para Cursos de Administração e Economia.* Rio de Janeiro.14 ed. Elsevier Editora Ltda.

Brigham, E., & Houston, J. (2012). *Fundamentals of Financial Management*. Cengage Learning.

Cardoso, V. R. S., & Pinheiro, M. C. (2020). Influência da Recessão e das Variáveis Macroeconômicas sobre a Estrutura de Capital Setorial. *Revista Contabilidade & Finanças, 31* (84), p. 392-408. DOI: https://orcid.org/0000-0002-2124-2282.

Cooper, D. R., Schindler, P. S., & Sun, J. (2014). *Business research methods.* 12th ed. Boston. Mcgraw-hill/Irwin.

Creswell, J. W. (2007). *Projeto de Pesquisa – Métodos Qualitativo, Quantitativo e Misto.* 2ª edição. Porto Alegre. ed. Artmed.

Dario, C., Conlisk, S., Iacoviello, M., & Penn, M. (2022). The Effect of the War in Ukraine on Global Activity and Inflation. FEDS Notes. Washington: Board of Governors of the Federal Reserve System, May 27, 2022. Recuperado de: https://doi.org/10.17016/2380-7172.3141.

Dellagnezze, René. (2022). *O Conflito Rússia e a Ucrânia*. 1ª ed. Revista REASE. 79 p.

Edan, T. S., Hraiga, R. A., & Farhan, R. M. (2022). The Role of Key Financial Performance Indicators in Investment Decision. *International Journal of Economics, Business and Management Studies (EBMS), 9*(11), p. 115-121.

Farasi, W. M. (2022). Profitability Analysis to Measure Financial Performance at PT Astra Agro Letari Tbk. *International Journal of Social Science and Human Research*, *5*(12), p. 5.257-5.263.

Flach, L., & Mattos, L. K. (2020). Indicadores Econômico-Financeiros e o Retorno das Ações de Empresas Listadas na B3. *Navus - Revista de Gestão e Tecnologia, 10*, p. 01-15.

Gil, A. C. (2017). *Como Elaborar Projetos de Pesquisa*. 6ª ed. São Paulo: Atlas.

Gitman, L. J. (2010). *Princípios de Administração Financeira.* São Paulo. ed. Pearson Prentice Hall.

Halkos, G.E., & Tzeremes, N.G. (2012). Analyzing the greek renewable energy sector: A data envelopment analysis approach. *Renew. Sustain. Energy Rev., 16*(5), p. 2884–2893.

Hall, R. J., Beck, F., & Toledo Filho, J. R. (2013). Análise do Impacto da Crise *Subprime* nas Empresas do Agronegócio Listadas na BM&F Bovespa. *Custos e Agronegócio on line*, *9*(1).

Hassan, A. (2019). Do renewable energy incentive policies improve the performance of energy firms? Evidence from OECD countries. *OPEC Energy Rev., 43*(2), p. 168–192.

Husna, N., & Desiyanti, R. (2016). The analysis of financial performance on net profit margin at the coal company. *International Journal of Management and Applied Science, 2*(4), p. 105–108.

Imhanzenobe, J. O. (2020). Managers' financial practices and financial sustainability of Nigerian manufacturing companies: Which ratios matter most? *Cogent Economics & Finance, 8*(1), p. 1–23.

Leal, J., & de Paula, L. F. (2022). Impactos do Conflito Rússia-Ucrânia para a Hegemonia do Dólar**.** *Boletim FINDE, 3*(1), ISSN: 2675-7389.

Lo, G-D., Marcelin, I., Bass`ene, T., & S`ene, B. (2022). The Russo-Ukrainian War and Financial Markets: The Role of Dependence on Russian Commodities. *Finance Research Letters, 50*, 103194.

Matarazzo, D. C. (2010). *Análise Financeira de Balanços: Abordagem Gerencial.* 7. ed. São Paulo: Atlas.

Monteiro, L. A., Feijo, C., & D´Agostini, L. L. M. (2022). Breves Notas Exploratórias sobre a Rentabilidade das Grandes Empresas de Capital Aberto. *Boletim FINDE, 3*(1), ISSN: 2675-7389.

OECD (2022). *Impacts of the Russian Invasion of Ukraine on Financial Market Conditions and Resilience: Assessment of Global Financial Markets,* OECD Publishing, Paris. Recuperado de: https://doi.org/10.1787/879c9322-en.

Pandini, J., Stüpp, D. R., & Fabre, V. V. (2018). Análise do Impacto das Variáveis Macroeconômicas no Desempenho Econômico-Financeiro das Empresas dos Setores de Consumo Cíclico e Não Cíclico da BM&FBOVESPA. *Revista Catarinense da Ciência Contábil, 17*(51), p. 7-22.

Reuters. How the Ukraine-Russia War Rattled Global Financial Markets. Marc Jones. August 23, 2022.

Ritta, C. O., Jacomossi, F. A., Fabris, T. R., & Klann, R. C. (2017). Um estudo sobre causalidade entre EBITDA e retorno das ações de empresas brasileiras (2008 - 2014). *Enfoque: Reflexão Contábil, 36*(2), p. 115-130. DOI: 10.4025/enfoque.v36i2.34126.

Siahaan, S., Sadalia, I., & Silalahi, A. S. (2021). Effect of financial ratios on stock returns with earning per share as moderating variable in banking companies on the Indonesia Stock Exchange (2012–2017 Period). *International Journal of Research and Review*, *8*(8), p. 398–406.

Teixeira, E., Oliveira, E. R., Santos, G. C., & Ferreira, R. A. (2022). Análise Comparativa do Desempenho Econômico-Financeiro entre os Setores de Consumo da B3, em Períodos de Crise Econômica. *Redeca, 9*, e56998. DOI: 10.23925/2446-9513.2022v9id56998.

Tudose, M. B., Rusu, V. D., & Avasilcai, S. (2022). Financial Performance – Determinants and Interdependencies Between Measurement Indicators. *Business, Management and Economics Engineering, 20*(1), p.119–138.

Venkatraman, N., & Ramanujam, V. (1987). Measurement of business economic performance: an examination of method convergence. *Journal of Management, 13*(1), p. 109-122.

Vieira, E. M. M., Santos, A. A., Lagioia, U. C. T, Vieira, G. F., & Santos, J. F. (2014). Melhores Grupos de Índices e Demonstrações Contábeis para Análise da Situação

Econômico-Financeira das Empresas na Percepção de Analistas do Mercado de Capitais. *Journal of Accounting, Management and Governance, 17*(3), p. 29-46.

World Bank. *The Impact of the War in Ukraine on Global Trade and Investment*. *Trade, Investment and Competitiveness; Equitable Growth, Finance and Institutions Insight.* Ruta, Michele. (2022). Washington, D.C. : World Bank Group. Recuperado de: http://documents.worldbank.org/curated/en/099750104252216595/IDU0008eed66007300452c0beb208e8903183c39.

Zeitun, R., & Saleh, A. S. (2015). Dynamic Performance, Financial Leverage and Financial Crisis: Evidence from GCC Countries. *EuroMed Journal of Business, 10*(2), p. 147-162.