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Data: 07/01/2026 00:05:45

DOI:10.17951/h.2023.57.4.23-44

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA
VOL. LVII, 4 SECTIO H 2023

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Stay or Leave? How the Policy of Business Cooperation with Russia Affected Value and Price of Listed Companies: Evidence from Dow Jones, DAX and WIG20

Keywords: value migration; war; capital market; financial markets; crisis; corporate social responsibility

JEL: G14; G32; G41

How to quote this paper: Antonowicz, A., Antonowicz, P., & Siciński, J. (2023). Stay or Leave? How the Policy of Business Cooperation with Russia Affected Value and Price of Listed Companies: Evidence from Dow Jones, DAX and WIG20. *Annales Universitatis Mariae Curie-Skłodowska, sectio H – Oeconomia*, *57*(4), 23–44.

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Abstract

Theoretical background: The crisis situation in the aftermath of the military conflict triggered by Russia's invasion of Ukraine has caused a significant reaction from financial markets. Not only the Russian RTSI index, but also the stock indexes of neighbouring countries (Poland, Germany), as well as the U.S. indices (NDX, US30, US500), declined in value in the following months of the war, which was a direct result of the declining capitalisation of their component companies. A team of Yale University researchers undertook a classification study on a group of more than 1,000 global companies, grouping them according to the strategy (business model) they adopted in the face of the response to Russian aggression against Ukraine. These groups were, in particular: (1) Grade F – defying Demands for Exit or Reduction of Activities: companies that are just continuing business-as-usual in Russia; (2) Grade D – Holding Off New Investments/Development: companies postponing future planned investment/development/marketing while continuing substantive business; (3) Grade C – Reducing Current Operations: companies that are scaling back some significant business operations but continuing some others; (4) Grade B – Keeping Options Open for Return: companies temporarily curtailing most or nearly all operations while keeping return options open; and (5) Grade A – Clean Break – Surgical Removal, Resection: companies totally halting Russian engagements or completely exiting Russia. This work provided the basis for an in-depth analysis of how financial markets (investors) reacted to companies that used extreme responses (completely breaking business ties with Russia as opposed to maintaining the existing business model and business ties with Russia). Depending on the adopted firm strategy, according to the Yale methodology, it can be observed that the impact of war on value was not uniform, and differences in value migration could be discerned.

Purpose of the article: In the article, the authors undertook to evaluate the reaction of financial markets in the period 31 December 2021 – 30 September 2022 on the basis of three stock market indices: (1) the US (Dow Jones Industrial Average); (2) the German (DAX 40 – Deutscher Aktien Index); (3) the Polish (WIG 20 – Warsaw Stock Exchange Index) with a particular focus on the date: February 24, 2022, when Russia's military aggression in the Ukrainian area began. The authors assessed how the volatility of the shares of selected companies in these indices evolved, and whether it was influenced by the social responsibility of the business conducted, as expressed by the severance of business relations with Russia, their periodic suspension or the lack of any response to the acts of war that began. Furthermore, a significant aim of the study was to assess the phenomenon of value migration in companies based on their business relationship strategies with Russia, classified according to the criteria upon which the Yale list was built.

Research methods: Critical analysis of the literature on the subject, statistical analysis, technical analysis of stock index volatility, induction and synthesis.

Main findings: In view of the object of research described in this way, in accordance with the idea accompanying the CSR policy, the following research hypothesis was adopted in the study: investment sentiment toward multinational corporations that, as a result of Russia's aggression in Ukraine, ceased business contacts with Russia altogether, differs from investor sentiment toward those organisations that did not take such action and continued business/economic cooperation with Russia.

Introduction

Wars and crises have accompanied the population since the dawn of time (Schneider & Troeger, 2006). Some of them show to some extent a cyclical nature and it is possible to see the symptoms of their arrival earlier, but those of a particularly destructive nature and low predictability often take the shape of a *black swan* (Taleb, 2014; Mariotti, 2022). Crises more or less contribute to the collapse of businesses and the impoverishment of society, and can intensify economic *catharsis* (Mączyńska, 2009; Brune et al., 2015). What makes the crises of decades ago

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different from those of today, however, is the degree and speed at which they "spill over" into the economy, due to the rapid flow of information. Whereas less than 150 years ago participants in the economic system received relatively delayed news of and information about the biggest crisis of the 19th century (which was initiated by a panic on the Vienna Stock Exchange) (Morawski, 2003) via dispatches, telegrams and newspapers, in modern times, when the first missile hit Ukrainian territory, the markets and the economy reacted almost immediately. The global megatrend of digitisation of markets and society is accelerating the flow of information, so even the slightest disruption, like a tiny seismic signal, is detected by global markets, contributing to shifting economic balances. This phenomenon is particularly noticeable in the capital markets (Boubaker et al., 2022; Boungou & Alhonita, 2022), which in real time, continuously process newly arriving information and induce dynamic changes in the valuations of various asset classes around the world. How the financial markets (PL – WIG20; GE – DAX; US – US30) reacted during the period February–September 2022, i.e. during the three consecutive quarters of Russia's war against Ukraine, is shown in Figure 1.

Figure 1. Volatility of WIG20, DAX and US30 in the first three quarters of Russia's war in Ukraine (against the background of PLN/USD strength)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

The nearly 40% decline in the value of the WIG20, along with the more than 20% reduction in the capitalisation of the 40 companies comprising the German DAX, and the approximately 19% reduction in the valuation of the 30 components of the US30, paint a picture of the reaction of financial markets to Russia's military conflict in Ukraine. It is also worth noting the inverse correlation of the strength of PLN/USD in relation to the development of the index's volatility trend.

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A research gap identified in the literature is the lack of studies related to examining premiums and discounts in the capital market depending on the adopted strategy of relations with a state engaging in unjustified warlike aggression against other countries. Existing research in the literature primarily focuses on the overall reaction of global markets or aggregate index movements without decomposing them into individual entities. Additionally, it addresses the issue of business strategies concerning collaboration with regimes and aggressor states. Studies aimed at understanding the impact of war on the capital market generally suggest significant devaluations of major stock market indices among the national aggressors. Typically, the most severe declines and fluctuations in value are observed at the beginning of the conflict when the market experiences shock and chaos, as observed on the Moscow Exchange at the onset of conflicts (Köseoğlu et al., 2023). Noteworthy are also the 10-year studies of CAC, Dow Jones, and FTSE indices conducted between 1990 and 2000. During this period, several significant military actions occurred, including the first Gulf War and the bombing of Yugoslavia. The authors of the study concluded that Western stock indices significantly lost value during this conflicts (Schneider & Troeger, 2006).

This study attempts to assess whether the response strategy of companies included in the major stock market indices in the US, Germany and Poland to hostilities in Russia, in the context of maintaining cooperation with Russian entities and/or operating in the Russian market, has affected selected market valuation parameters. The following measures were analysed: stock price fluctuations, market capitalisation and an assessment of the state of value migration in terms of changes in the P/BV (price/book value) measure. A five-point grade proposed by a Yale University research team on the so-called CELI Yale list of shame was used as a variable to categorise the adopted strategy of individual actors with respect to Russia's aggression against Ukraine. The authors adopted the following research hypothesis:

H1: Investment sentiment toward multinational corporations that completely stopped business contacts with Russia as a result of Russia's aggression in Ukraine differs from investors' sentiment toward those organisations that did not adopt such action and continued business/economic cooperation with Russia.

The research question was: Has the adopted strategy for managing business relations in the Russian market during the period under review, contributed to the worsening or improvement of parameters related to the company's market value?

According to the deductive formulation of judgments, it would seem rational that companies that have transparently (through appropriate CSR tools) broken off cooperation with Russia should be evaluated differently by investors in the capital market from those entities that have continued this cooperation (which arises from the theory of value formation by non-fundamental factors).

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Literature review

The "shame" list compiled by the team led by Yale University researchers ranks more than 1,000 global companies according to their adopted strategy for responding to Russian aggression against Ukraine. The list, posted on the Yale University website, is updated on a regular basis. It assigns companies, listed on global stock indices, to one of five ratings. Table 1 presents the ratings and corresponding conduct strategies of companies that had business relations with the Russian Federation and/or Russian companies in the period prior to the acts of war in Ukraine.

Table 1. The essence and specificity of the concepts of value migration and short-term fluctuations in business valuation of a company

Rate	Strategy	Description
A	Withdrawal	Companies totally halting Russian engagements or completely exiting Russia
B	Suspension	Companies temporarily curtailing most or nearly all operations while keeping return options open
C	Scaling Back	Companies that are scaling back some significant business operations but continuing some others
D	Buying Time	Companies postponing future planned investment/development/marketing while continuing substantive business
F	Digging In	Companies that are just continuing business-as-usual in Russia

Source: www2.

It should be noted that wars and conflicts are not unfamiliar to companies. For many years, global corporations as well as smaller entities have adapted to operating in an era of recurring war crises. The results of historical research on the topic of doing business in times of military conflict suggest that war influenced the subsequent shape of business and businesses themselves often influenced the outcome of wars by supplying equipment, ammunition and innovations to the hostile parties (Lakomaa, 2017). It is no secret that the motive for business involvement in conflict is the temptation of profit, often many times higher than in times of peace. In the 21st century, however, with the rise of corporate social responsibility, ESG reporting and the primacy of ethical standards over the desire for unconditional profitability, it is becoming increasingly difficult for companies to conduct business in the realities of war without damage to reputation. Today, the standard that increasing profits or attempting to create value at the expense of engaging in unjustifiable war and human rights violations is not morally justifiable (Alzola, 2011), should be considered unarguable. In the age of digitisation and rapid flow of information, as well as the high importance of value creation through effective investor relations (IR), stakeholders, especially investors, customers and those who identify themselves with a brand, absolutely expect companies to take clear and transparent positions on specific events, especially those of a drastic nature such as wars.

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Data: 07/01/2026 00:05:45

The realisation of the purpose of the study and the verification of the research hypothesis also requires an approximation of the essence of values in contrast to the phenomenon of value migration. The *value migration* should be understood as the process of value transfer between companies and entire sectors, resulting from investors' attempts to find the most efficient way to allocate capital (Siudak, 2013). This concept was created and described by Slywotzky, who defined it as follows: "Value migration shows the flow of profits and shareholders' wealth through the business's chessboard. It is a process in which value drains away from economically obsolete business models and flows to new ones that more effectively create customer benefits and extract value for the owner" (Slywotzky et al., 2000). Value migration should also be skilfully distinguished from short-term changes (value fluctuations), which occur as a result of many factors naturally occurring in the market. The basic differences between these phenomena are illustrated in Table 2.

Table 2. The essence and specificity of the concepts: *value migration* and *short-term fluctuations in company valuation*

Criterion/Concept	Short-term fluctuation of enterprise value	Value migration
Nature of change	There is often no uniform trend, intertwined creations and value losses (stationarity of change)	Observed long-term regularities and trends in value change (consistent outflow and inflow – volatility of change)
Level	Micro and macroeconomic	More often macroeconomic
Main determinants	Factors related to the fluctuating economy, management decisions in the selection of projects performed (i.e. the value derived from individual projects) and the management process itself	Systemic and structural factors, obsolescence of business model, dying of industries (emergence of so-called "no-profit zones")
Special features	Conditioned by errors in the art of management and inadequate measurement of corporate performance	Outflow of human and intellectual capital
The aspect of time	Medium- and short-term changes	Long-term changes
Suggested actions	In the event of a loss of value: change of management or the way it is reimbursed, focus on activities in which a competitive advantage is present, use of outsourcing, level of projects with $NPV < 0$	In the case of value outflow: extensive systemic measures, e.g. a radical change in the business model or a change of the industry

Source: (Siciński, 2019).

The war has a complex impact on the entire economy, especially on the stock market. Investing in equities is generally associated with high or very high risk. Consequently, active military actions typically leave a negative mark on market quotations and major stock market indices. In such cases, investors tend to allocate a portion of their assets to safer instruments, such as government bonds or gold. However, the impact of war is not unequivocal; the direction of its influence on the stock market and the entire economy depends on the proximity of the conflict (its "gravity"), the individual resilience of the economy, and its connections with other countries. For example, as a result of military actions that may contribute to

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Data: 07/01/2026 00:05:45

an increase in fossil fuel prices, countries whose budgets are significantly fueled by hydrocarbon sales may benefit from commodity price hikes. On the other hand, countries dependent on fossil fuel imports or with front-line economies may suffer significantly from the conflict, reflected in substantial stock market declines and capital outflows, along with a reduction in foreign investments. In the context of the volatility of a company's value during wartime, reference should be made to the seven key value drivers identified by Rappaport, (1999, pp. 65–69), including:

– sales growth rate,
– operating profit margin,
– tax rate,
– fixed capital investment,
– working capital investment,
– planning period,
– cost of capital.

Active wartime operations have a multifaceted impact on the aforementioned factors, and the ultimate directions of changes depend on the industry in which the considered company operates. On the one hand, companies involved in industries such as arms manufacturing or the supply of highly durable food products (e.g. canned meat) are expected to experience high sales growth and an increase in operational profitability due to the growing demand on the front lines (Puls Biznesu, 2022). On the other hand, entities offering transportation or hospitality services in regions adjacent to active military activities are likely to experience an unfavorable alignment of almost all seven value drivers, making war a significant value destroyer for them. This is confirmed even by studies of companies conducted in distant Australia, where it was observed that entities with strong growth, low liquidity, and export-oriented focus were more exposed to the negative effects of Russia's aggression in Ukraine (Kamal et al., 2023).

Research methods

The following research methods were used in this study: critical analysis of the literature, analysis and synthesis, as well as statistical analysis. Specifically, measures representing market-based multipliers were used to measure value migration. Two alternative approaches can be used in this case: based on the P/E (price/earnings) ratio and based on the price/book value (P/BV) ratio (Szczepankowski, 2015). Practical attempts to determine the phases of value migration by means of changes in market multipliers can be seen in the study by Fama and French (2007) and Siciński (2019), among others. In this study, the measurement of value flow was implemented using the formula proposed by Szczepankowski (2015):

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Data: 07/01/2026 00:05:45

$$\Delta(P/BV) = (P/BV)_t - (P/BV)_{t-1}$$

where:

P/BV – price/book value ratio (its averages are recommended, e.g. a picture of the annual value, is the average *P/BV* – value of the last day of consecutive quarters in year *t*).

In order to assign the object to the selected phases of migration by means of a change in the *P/BV* measure, Szczepankowski (2015) proposes the following limits of absolute deviations:

– above 0.15 – indicates entities in the flow of value for owners phase,
– from (-0.15) to 0.15 – determines the stabilisation phase,
– below (-0.15) – signifies entities in the outflow of value phase.

The Price-to-Book Value (P/BV) ratio, while a widely used financial metric, is not without its limitations. One significant drawback is its reliance on book value, which is based on historical costs and may not accurately reflect current market conditions. This can result in misrepresentations of a company's true economic value, particularly in industries where the book value of assets may significantly differ from their market values. Additionally, P/BV fails to account for intangible assets such as brand value, intellectual property, and human capital, which are increasingly vital contributors to a company's worth in the modern economy. In industries driven by innovation and technology, relying solely on P/BV may lead to an incomplete assessment of a company's financial health and potential for growth. Furthermore, P/BV does not consider a company's earnings or future prospects, making it less informative for investors seeking comprehensive insights into a company's performance. In dynamic market environments, where rapid changes and uncertainties are prevalent, the P/BV ratio may provide an overly simplistic and backward-looking view of a company's valuation. Nevertheless, despite its limitations, this indicator presents an intriguing solution as a measure of value migration, owing to its simplicity and excellent comparability of data regardless of the financial accounting standards applied in a given country.

Results

The study began by assessing the structure of companies on CELI Yale list according to the assigned rating for cooperation with the Russian Federation. These data are summarised in Table 3.

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Data: 07/01/2026 00:05:45

Table 3. The structure of companies included in the various stock indexes according to the awarded rating on the CELI Yale list (as of September 30, 2022)

Grade/Index	DAX40	US30	WIG20	Sum
A	5 (12.50%)	5 (16.67%)	6 (30.00%)	16 (17.77%)
B	7 (17.50%)	9 (30.00%)	4 (20.00%)	20 (22.22%)
C	7 (17.50%)	7 (23.33%)	2 (10.00%)	16 (17.77%)
D	5 (12.50%)	2 (6.67%)	0 (0.00%)	7 (7.77%)
F	3 (7.50%)	0 (0.00%)	0 (0.00%)	3 (3.33%)
n/a (not listed on CELI Yale list)	13 (32.50%)	7 (23.33%)	8 (40.00%)	28 (31.11%)
Sum	40 (100%)	30 (100%)	20 (100%)	90 (100%)

Source: Authors' own study compiled on the basis of the results of the analyses.

The presence of the most of the companies listed in the various stock market indices was observed on the CELI Yale list. Starting with the DAX40 index, the corresponding rating was given to less than 68% of entities. The remaining part (13 companies) was not on the CELI list, meaning that the team of researchers at Yale University did not identify a rationale for business cooperation of these entities with the Russian Federation. Figure 2 shows the development of the volatility of all Grade A DAX components, while Figure 3 presents the analogous volatility shown by Grade 3 companies over the same period. These charts, as well as the volatility of the components of the other two indices (US30 – US and WIG20 – Poland) discussed further below, show the direction of the trend of changes in the valuation of these companies by the extreme segments of their business models. From the perspective of corporate social responsibility and appreciation of the change in investment strategies by financial markets (investors), a reaction of a stronger price reduction (*in minus*) of those companies that suspend or completely break off business relations with the Russian side after the start of the war would be expected. It is worth noting in this context that the volatility of the most discounted entities – for both A- and F-rated companies – oscillated in the first three quarters of the war (i.e. until September 30, 2022) at almost identical levels, i.e. -32–44%. Share prices of fundamentally strong listed companies behave like a "float". After the bear market period, they return to the upward trend. We had such a situation in the final stage of the pandemic. Both the American stock indices (JD, NASDAQ, SP500) and the German stock indices (DAX 40) reached ATH levels. It was a "perfect moment" for a turn towards a bear market, which has also happened since the outbreak of the war in Ukraine.

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Data: 07/01/2026 00:05:45

Figure 2. Percentage change in the value of stock price quotations of the five components of the DAX40 German stock market: IFX, BAS, DBK, HEN3, DTE (against the main index) with grade: A – companies totally halting Russian engagements or completely exiting Russia, in the period: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

Figure 3. Percentage change in the value of stock price quotations of the five components of the DAX40 German stock market: 1COV, FRE, SHL (against the main index) with grade: F – companies that are conducting business as usual in Russia: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

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Data: 07/01/2026 00:05:45

In the case of the DOW30 index, 23 entities were included in the CELI list, which means that fewer than one in four, on average, of the most important US listed companies was not included on the YALE list. The next two charts (Figures 4 and 5) show the development of volatility of companies in the US30 index, which, however, were classified at the extremes in the YALE list as Grade A and D (see markings from Table 1). Interestingly, the similarly observed stock valuation volatility of Grade D companies, i.e. those pursuing a more liberal so-called "buying time" strategy, was on average far less radical than that of German companies (see Figure 5 vs. Figure 3), but also approached the trend taken by one of the companies listed on the Polish stock exchange (Figure 5 vs. Figure 7). Here, however, the situation is not comparable due to the representation of the extreme group in the Polish index only by one company (and belonging to Grade C), moreover, operating on a regulated market (the fuel sector, PKN), which, incidentally, in the following months completed a merger with LTS, and is also in the process of further planned acquisition activities (Antonowicz & Bęben, 2022).

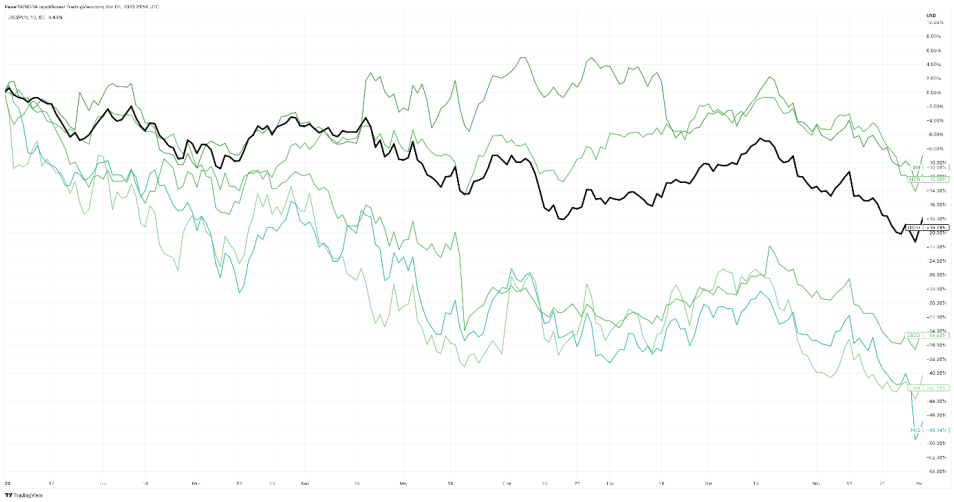

Figure 4. Percentage change in the value of stock price quotations of the five components of the US30 American stock market: NKE, CRM, CSCO, MCD, IBM (against the main index) with grade: A – companies totally halting Russian engagements or completely exiting Russia: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

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Figure 5. Percentage change in the value of stock price quotations of the three components of the US30 American stock market: PG, JNJ, MRK (against the main index) with grade: D – companies postponing future planned investment/development/marketing while continuing substantive business: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

Referring to the entities included in the Polish WIG20 index, it can be noted that 12 of them had business relations with the Russian Federation, and eight were not on the "shame" list. The corresponding volatility in the share prices of WIG20 companies – this time the components that were included in the Grade A and Grade C groups, is shown in Figures 6 and 7. The picture of the reaction of investors (mainly institutional investors, i.e. investment funds) to the change in business models is here much more difficult to compare with the American and German picture, due to the fact that: (1) the Polish stock market – particularly referring to the ownership structure of the WIG20 index – is heavily "politicised" due to the high representation of public companies in the index composition; (2) the political reaction of the Polish authorities (both at the level of media reports and radical international policy being a result of Poland's geopolitical location, was very sharp and transparent), which both at the level of attempts made to destabilise political and business contacts with Russia was far more radical than in the case of other (European) economies, including Germany in particular.

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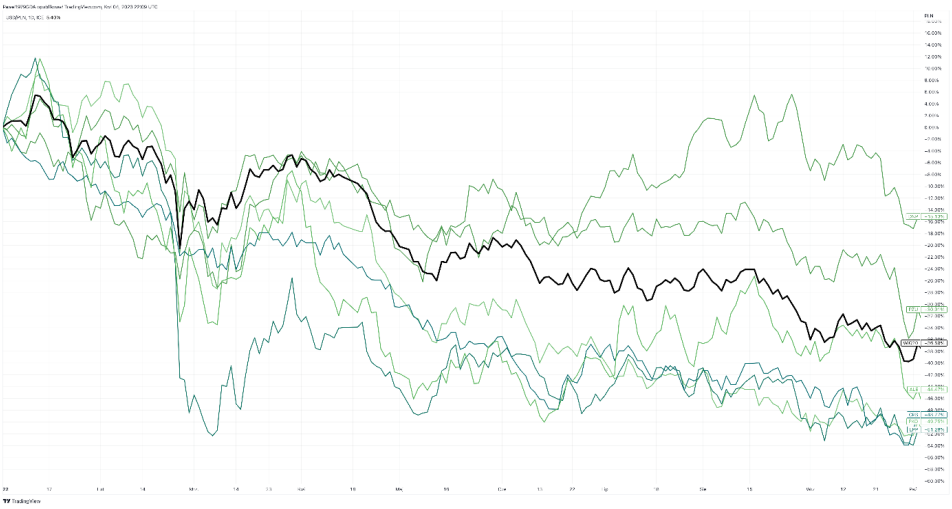

Figure 6. Percentage change in the value of stock price quotations of the six components of the WIG20 Polish stock exchange: LPP, PKO, CPS, ALE, PZU, DNP (against the main index) with grade: A – companies totally halting Russian engagements or completely exiting Russia: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

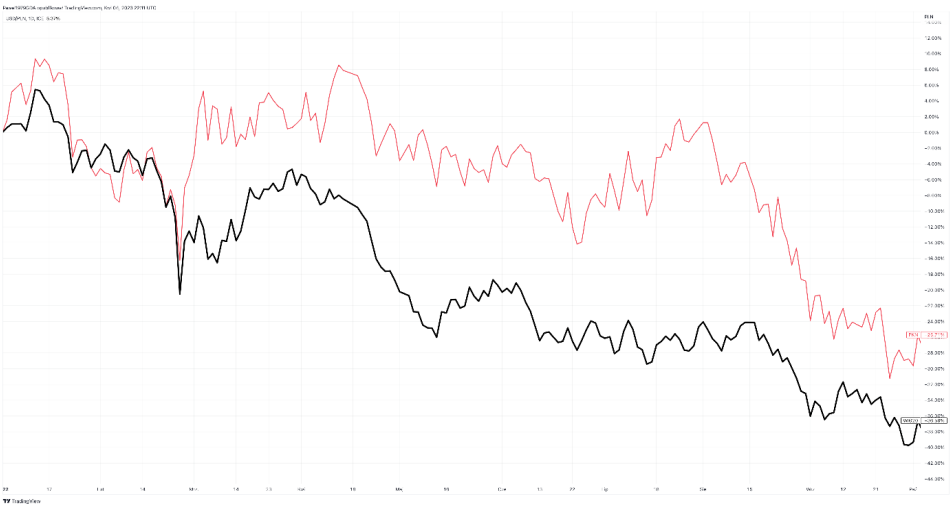

Figure 7. Percentage change in the value of quoting the price of PKN shares from the WIG20 (against the main index) with grade: C – Companies that are scaling back some significant business operations but continuing some others: December 31, 2021 – September 30, 2022 (as of September 30, 2022)

Source: Authors' own study based on quotes from the system: TradingView.com (30.09.2022).

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It should be emphasised that in the case of the Warsaw index, none of the entities included in the CELI list received a "D" or "F" grade (as of September 30, 2022), which indicates that companies listed in the Polish index have reacted decisively to Russian aggression by reducing business involvement in the Russian Federation. The overwhelming response can also be seen in the group of entities included in the DOW30 index, where almost half of the companies received an "A" or "B" grade, and only two entities in the surveyed index decided to use a "buying time" strategy. Companies listed on Germany's DAX40 had the highest propensity to maintain business relations with the Russian Federation. It can be estimated that as of September 30, 2022, up to one in five of the DAX40 index actors maintained the same level of business exposure as before the aggression began, or at most opted for a "buying time" strategy. Only 12 entities on Germany's most important stock index took decisive action on news of Russia's aggression against Ukraine (i.e. they were rated A or B).

The market value of a stock is, according to the theory of VBM (value-based management), the fastest way to represent the value of a company. Nevertheless, it should be taken into account, as rightly emphasised by A. Damodaran, among others, that by market value we mean price (that is, the effect of the forces of supply and demand, including non-fundamental factors) rather than intrinsic value (Damodaran, 2019). This is because the price should follow the value of the company over the long term, but due to capital market distortions (including investors' emotions and sentiment), this process does not always work properly. Despite this, the market price (and thus the total capitalisation) of a listed entity remains a pretty good barometer of investors' expectations and mood, adjusted for the subjective risk of unrealised cash flows in the future. Therefore, in the next step, an assessment of how the market value of entities included in the CELI list changed due to the received rating of business contacts with the Russian Federation was undertaken. For this purpose, a measure of the relative rate of change of capitalisation was used, which was calculated using the following formula:

$$Relative\ change\ in\ Market\ Cap = \frac{Market\ Cap_t - Market\ Cap_{t*}}{Market\ Cap_{t*}} \times 100\%$$

where:
Market Cap_t = current market capitalisation of listed company,
Market Cap_t = market capitalisation of listed company in base period.

Basic statistics describing the relative rate of change in the capitalisation of companies included on the CELI list, according to the rating assigned (A–F) are presented in Table 2 and on box and whisker plots 1 and 2 chart. One base period (December 31, 2021) and two periods relating to it (June 30, 2022 and September 30, 2022) were used to study the rate of change in capitalisation.

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Table 4. Descriptive statistics describing the relative rate of change in the capitalisation of companies included on the YALE list and in the DAX40, DOW30 and WIG20 indices during the period 31.12.2021–30.06.2022 and 31.12.2021–30.09.2022

Grade	A	B	C	D	F
Period 31.12.2021–30.06.2022					
Mean	-29.40%	-28.29%	-18.53%	-10.35%	-33.90%
Median	-34.17%	-27.59%	-18.68%	-12.22%	-33.68%
Standard deviation	18.01%	17.51%	13.72%	22.95%	9.46%
Mean +/- 1SD	-47.40%; -11.39%	-45.80%; -10.77%	-32.25%; -4.81%	-33.30%; 12.61%	-43.36%; -24.43%
Period 31.12.2021–30.09.2022					
Mean	-40.46%	-37.94%	-26.02%	-20.98%	-47.32%
Median	-43.79%	-40.10%	-25.85%	-23.70%	-44.55%
Standard deviation	17.46%	21.20%	15.56%	20.84%	5.60%
Mean +/- 1SD	-57.92%; -23.00%	-59.14%; -16.74%	-41.58%; -10.47%	-41.82%; -0.15%	-52.92%; -41.72%

Source: Authors' own study compiled on the basis of the results of the analyses.

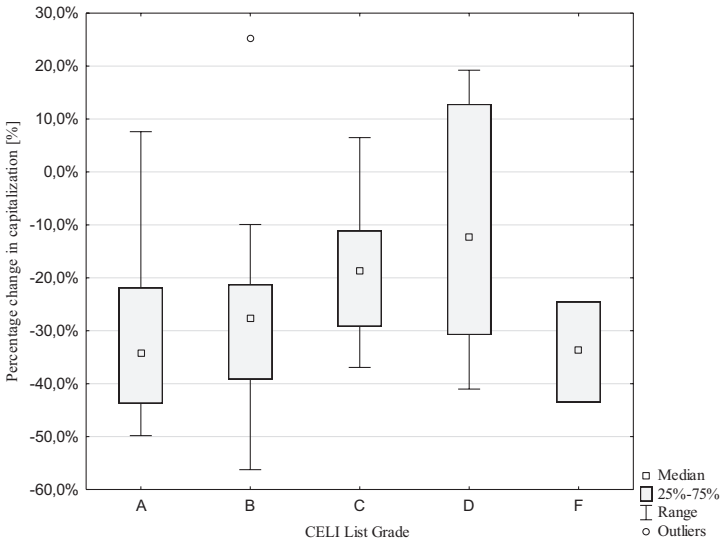

Figure 8. Relative change in capitalisation (%) of enterprises (DAX40, DOW30, WIG20) by Yale CELI List grade in the period 31.12.2021–30.06.2022

Source: Authors' own study compiled on the basis of the results of the analyses.

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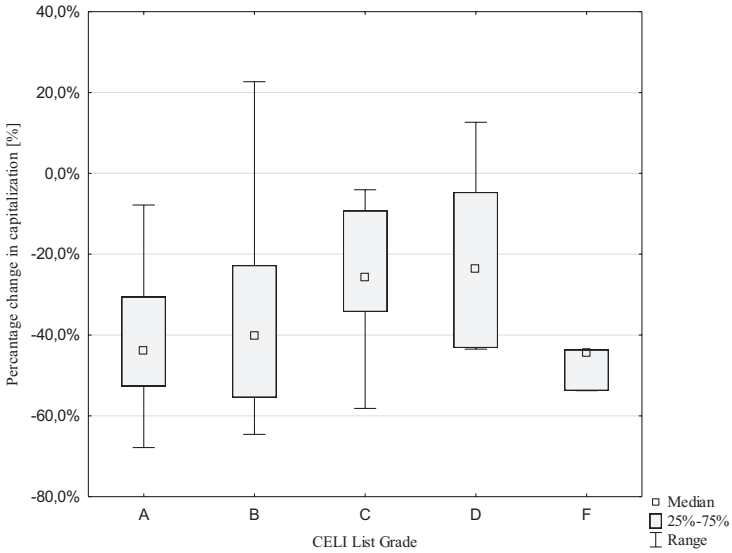

Figure 9. Relative change in capitalisation (%) of enterprises (DAX40, DOW30, WIG20) by Yale CELI List grade in the period 31.12.2021–30.09.2022

Source: Authors' own study compiled on the basis of the results of the analyses.

In terms of average (arithmetic mean and median), the same direction of changes in capitalisation was observed in the period from December 31, 2021 to June 30, 2022 and from December 31, 2021 to September 30, 2022 regardless of the rating received according to the CELI Yale list. The average decline in capitalisation during these periods was the result of market-wide stock market decreases, which were seen in almost all key indexes around the world. Nevertheless, it can be noted that in the period from December 31, 2021 to June 30, 2022, the lowest rate of percentage capitalisation loss was recorded in the group of companies that adopted a "scaling back" strategy (grade "C", $\bar{X} = -18.53\%, Me = -18.68\%$) and a "buying time" strategy (grade "D", $\bar{X} = -10.35\%, Me = -12.22\%$). The highest typical percentage loss of capitalisation, as measured by the *typical area of variability,* was recorded for the group of companies that received an "F" grade, and thus chose to remain in unchanged business relations with the Russian Federation. Analysing the next period (from December 31, 2021 to September 30, 2022), one can see convergent results in comparison to the previous period. Entities that were ranked C or D on CELI Yale list had the lowest average decline in capitalisation in relative terms. Accordingly, average descriptive statistics were obtained for entities categorised as C or D: $\bar{X} = -26.02\%, Me = -25.85\%$ and $\bar{X} = -20.98\%, Me = -23.70\%$. As in the previous period (from December 31, 2021 to June 30, 2022), the highest expected decrease in capitalisation (measured by the arithmetic mean and median) was recorded in the group of companies that decided to keep business relations with Russia unchanged (grade "F").

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Data: 07/01/2026 00:05:45

In the next stage, an attempt was made to measure the phenomenon of value migration in the two analysed periods (from December 31, 2021 to June 30, 2022 and from December 31, 2021 to September 30, 2022). A formula based on the change in the P/BV measure, proposed by Szczepankowski (2015), was used to determine the phases of value migration for the studied entities. The percentage of companies assigned to specific phases of value migration, according to the assigned rating of business exposure in Russia, is shown in Figure 3 (period from December 31, 2021 to June 30, 2022) and Figure 4 (period from December 31, 2021 to September 30, 2022).

Figure 10. Relative structure of enterprises (%) in particular phases of value migration by Yale CELI List grade in the period 31.12.2021–30.06.2022 (DAX40, DOW30, WIG20)

Source: Authors' own study compiled on the basis of the results of the analyses.

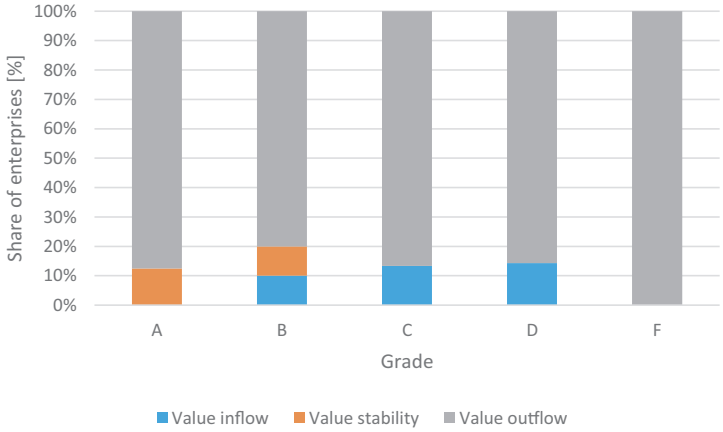

Figure 11. Relative structure of enterprises (%) in particular phases of value migration by CELI Yale grade in the period 31.12.2021–30.09.2022

Source: Authors' own study compiled on the basis of the results of the analyses

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In the period from December 31, 2021 to September 30, 2022, all F-rated companies were characterised by a phase of value outflow (in terms of changes in the P/BV measure). In contrast, the highest percentage of companies that did not experience outflow of value (and thus showed value stabilisation or value inflow) was identified for groups of companies that adopted a "scaling back" (grade C) and "buying time" (grade D) strategy. In addition, it should be noted that in the first period (31.12.2021–30.06.2022), more than 30% of companies that decided to completely abandon business cooperation with Russia (grade A) were characterised by an inflow of value or its stabilisation. In the next analysed period (31.12.2021–30.09.2022), as in the previous one, all entities marked on the list as "F" were characterised by an outflow of value. For the C and D ratings, there was a small percentage of entities in the value inflow phase (about one entity in ten in C as well as in D groups) and a definite dominance of entities in the value outflow phase – more than 90% of entities in each of the studied groups for the "scaling back" and "buying time" strategies were characterised by value erosion. In the group of entities that adopted A or B strategy, there is also a noticeable dominance of entities in the value outflow phase. For the B rating 80% of entities in the outflow value phase were identified, and for the A rating, less than 90%, respectively.

Discussions

Referring to other previous completed studies, it can be noted that the issues analysed in the article are unique in their own way, although the reaction of financial markets to the war in Ukraine is the subject of quite a few academic publications, including (Kumari et al., 2023); Chortane & Pandey, 2022; Aliu et al., 2022; Silva et al., 2023; Muddasir, 2023; Diaconaşu et al., 2022; Federle et al., 2022; Del Lo et al., 2022; Sun & Zhang, 2022; Alam et al., 2022) and many others. The war in Ukraine is the first full-scale conflict in Europe at a time when capital markets are already highly digitised, there is strong globalisation and the flow of information is dynamic thanks to the widely available Internet. This means that there has not been a conflict of this magnitude before in the history of Europe, under similar business conditions (due to globalisation, the importance of CSR policies and the digitisation of markets), and thus an opportunity to assess the impact of a cooperative strategy with an aggressor on the market parameters of companies maintaining such cooperation. The current situation in Ukraine is also unique in that the aggressor's economy is widely linked to the global economy, including its dependence on energy resources, as well as to the many foreign direct investments that have been made in Russia. This implies multifaceted consequences – not only in the valuation of assets involved directly in the war-affected countries, but also, through global inflation in the prices of goods and services for other participants in the economic process from distant regions of the world (www1). Economic rationality and financial social deduction sometimes

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come into conflict. This is the case of social judgment (stigmatising) companies that maintain business relations with the Russian side, while economic (investment) "pragmatism" already states otherwise. While the authors of the study have made this apparent in their research, it is also worth discussing by analogy the radically opposite assessment by investors of the changes in business models that take place at different phases of the business cycle. In addition, we pose a hypothesis that may inspire for the future (not only for ourselves), that due to the shortening lengths of the phases of business cycles, we can expect the next changes – statistically significant and likely to cause major perturbations in the financial markets – not so much at the end of the next decade, but rather in the next 5 years. Therefore, it should be emphasised unequivocally that, from an investor's perspective, this seems to be an extremely important research direction, which requires not only in-depth empirical research (including theoretical research), but also, above all, a redefinition of the meaning of social responsibility, the increasing importance of political decisions, and the separate treatment of fundamentally powerful entities, due to their form of ownership and operation in a regulated market, from entities subject to natural laws of selection, based on the principles of free market competition. All this means that the future of the capital markets will be far more turbulent (volatile) than what we have experienced in past decades.

Conclusions

In summary, the business strategies adopted by globally recognised corporations with regard to the response to Russia's military onslaught on Ukraine highlighted several key regularities in the processes taking place in the capital market at that time (Yousaf et al., 2022; Ahmed et al., 2022). First, taking the assumed period of analysis into consideration, it is important to point out the lack of evidence that the market more effectively protected the capitalisation of entities that showed full solidarity (Grade A and B) with Ukraine in terms of their strategy of cooperation with the Russian market compared to the other groups of companies (C, D and F) (see also: Banaszkiewicz & Pilarski, 2022). In correspondence to the formulated research question, an on the basis on the relative changes in capitalisation during the period under study as well as the value migration ratio (P/BV change), it can be seen that the most advantageous strategy (from the point of view of protecting earned value) was to use approach C ("scaling back") or strategy D ("buying time"). These groups had the relatively lowest capitalisation losses in relative terms as well as the lowest share of entities in the value outflow phase. This means that during the period under review, the market was likely to assess the war as a short-term phenomenon (with a possible end by the end of 2022) in which adoption of one of the extreme strategies by a company (A – full exit from the Russian market or F – preservation of the *status quo*) is likely to generate the highest risk of destroying expected cash flows

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once it ends. Referring to the research hypothesis posed, on the other hand, evidently, research has shown that the socially desirable (in Western societies) stigmatisation of business contacts with the aggressor (Król, 2022) – which, after all, can be seen, for example, in the successive sanctions packages of EU Member States, has not transferred into a commensurate response of financial markets (investors). The opinion of the diminishing role of fundamental analysis in favour of technical analysis, which has just been emphasised in particular during the period of a bull market (downturn), loses its significance when it turns out once again that the strongest components of global stock market indices, without much regard for periodic (short-term) changes / decision-making movements, after a period of correction – return like "fishing floats" to the previously determined upward trajectory. Moreover, this is happening amid a high level of correlated volatility in the Asian and the US market, or finally at the level of the underlying European indices (Prokopowicz et al., 2023). Cyclicality in the financial markets is a phenomenon that has been known for a long time, while its dynamics are accelerating significantly, hence we can expect that after the strengthening of investment demand, another corrective wave, for which we will not have to wait another 10 years, will soon come.

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