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The impact of the Ukraine-Russia war on world stock market returns

Whelsy Bougou* Alhonita Yatié†

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Abstract

As a topical topic, this paper studies the responses of world stock market indices to the ongoing war between Ukraine and Russia. The empirical analysis is based on daily stock market returns in a sample of 94 countries and covers the period from 22 January 2022 to 3 March 2022. We consistently document a negative relationship between the Ukraine-Russia war and world stock market returns. Furthermore, our results reveal that returns have been significantly lower since the invasion of Russian troops into Ukraine on 24 February 2022. Overall, we provide the first empirical evidence of the effect of the Ukraine-Russia war on international stock market returns.

JEL Code: H56, G11, G14, G15.

Keywords: War, Russia, Ukraine, Stock index.

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1. Introduction

“The daily Composite Indicator of Systemic Stress (CISS) [...] indicates severe financial stress in the euro area caused by the war in the Ukraine”

Manfred Kremer, Head of Financial Research ECB, 14 March 2022.

Several months after the deployment of several military bases close to the border with Ukraine, Russia officially attacked Ukraine on 24 February 2022. The ongoing military action raises concerns about: (i) the duration of the conflict; (ii) how Russia will respond to Western sanctions; (iii) its potential impact on financial markets. In this paper, we focus on the last point. Indeed, in addition to the loss of life and destruction of property, this attack has introduced new uncertainty into world stock markets (e.g. in addition to those related to the COVID-19 pandemic). Although anecdotal, the New York Times¹ noted that on the day of the attack, the S&P 500 index recorded its first correction since October 2020, i.e. it fell by more than 10% from its recent peak². To the best of our knowledge, there are still no empirical studies exploring the impact of the Ukraine-Russia war on world stock markets. This paper therefore aims to fill this gap.

For our empirical investigation, we use daily data of stock market returns in a sample of 94 countries over the period from 22 January 2022 to 3 March 2022. Our results highlight a negative and significant effect of the armed conflict between Ukraine and Russia on world stock returns. Although tensions between Ukraine and Russia have existed for a long time, the responses of stock

¹ [nytimes.com/2022/03/07/business/stock-market-today.html](https://www.nytimes.com/2022/03/07/business/stock-market-today.html)

² Other stock indices also fell after the Russia attack, such as IMOEX (-33.28%), Wig Poland Index (-10.53%), DAX (-3.96%), FTSE Italia (-4.04%).

market indices to the conflict were more pronounced starting with Russia's invasion of Ukraine on 24 February 2022.

The results of our analysis are important on at least two aspects. First, they allow us to understand the financial impacts of the ongoing conflict so that investors, portfolio managers and policy makers can design effective financial strategies to better protect themselves. Second, our results extend previous studies on the relationship between wars and stock markets (such as Frey and Kucher, 2003; Hudson and Urquhart, 2015; Goel et al. 2017; Richard et al. 2022) by providing new evidence by taking the case of the war between Ukraine and Russia.

The remainder of the paper is organized as follows. Section 2 describes the data and the model. Section 3 presents the results. Section 4 concludes.

2. Data and model

The level of our analysis is country-day and covers the period from 22 January to 3 March 2022 (without weekends). The daily world stock index data was obtained from the <https://www.investing.com/>, consisting of almost 2500 daily observations. We use the daily log return of each stock market index. Our sample is based on stock market returns in 94 countries around the world³. Data

³ Algeria, Argentina, Australia, Austria, Bahrain, Bangladesh, Belgium, Benin, Bosnia-Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Denmark, Ecuador, Egypt, Finland, France, Germany, Ghana, Greece, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lebanon, Malaysia, Malta, Mauritius, Mexico, Mongolia, Montenegro, Morocco, Namibia, Netherlands, New-Zealand, Niger, Nigeria, Norway, Oman, Pakistan, Palestine, Peru, Philippines, Poland, Portugal, Qatar, Romania, Rwanda, Saudi Arabia, Senegal, Serbia, Singapore, Slovakia, Slovenia, South-Africa, South-Korea, Spain, Sri-Lanka, Sweden, Switzerland, Taiwan, Tanzania, Czech Republic, Thailand, Togo,

on search volumes related to the Ukraine-Russia war was downloaded from Wikipedia Trends⁴. Although the start of the war is 24 February 2022, many of the world's major forces had already been planning for it for some time and considered it only a matter of time.

Using panel data, we analyze the reaction of world stock market returns to the war between Ukraine and Russia. The panel data describes a worldwide sample of 94 countries and is estimated as follows:

$$Stock_{c,d} = c + \alpha_1 War_{c,d} + \theta_d + \lambda_c + \varepsilon_{c,d} \quad (1)$$

where $Stock_{k,t}$ denotes the log of the stock market index of country c , on day d . $War_{c,d}$ represents the log of Wikipedia Trends search trends data in country c on day d , related to the war between Ukraine and Russia (including words like conflict, war, Ukraine, Russia, Vladimir, Putin). It therefore measures the intensity (or anxiety) of internet searches related to the current armed conflict between Russia and Ukraine (reported in Tables with "Ukraine-Russia war")⁵.

The regression controls for time fixed-effects θ_d absorbing a level shift for each day, capturing the overall trend. The country fixed-effects λ_c , absorbs the different fixed and time-invariant levels of search intensities across countries. The standard errors are robust and clustered at the country level. This analysis captures the impact of the armed conflict between Ukraine and Russia on world stock market returns.

Tunisia, Turkey, Uganda, United Kingdom, United Arab Emirates, United States, Venezuela, Vietnam, Zambia, and Zimbabwe.

⁴ Wikipedia Trends is considered a metric for expressing public interest in a topic. High interest can express anxiety (stress) or intensity (Moat et al. 2013).

⁵ As a robustness check, we consider data from Google search trends to measure concerns about the conflict between Ukraine and Russia. The results of this analysis are reported in the Appendix in Table A and leave our results unchanged.

3. Results

In this section, we present the results of our analysis on the impact of the war between Ukraine and Russia on world stock market indices. As a proxy for the war, we use daily Wikipedia Trends searches in several countries around the world on topics related to the ongoing armed conflict (see Table 1). We also investigate how these effects evaluated before and after the invasion of the Russian army into Ukraine on 24 February 2022 (see Table 2).

Table 1 presents our main results considering several specifications. Our results highlight a negative and statistically significant relationship at the 1% level between the current conflict and stock market indices. Indeed, our results show that tensions between Ukraine and Russia have a significant negative impact on the performance of world stock market indices. This result highlights the sensitivity of world markets to the conflict between Ukraine and Russia⁶. This result is consistent with previous analyses that have also found a negative relationship between conflict and stock market indices (e.g. Frey and Kucher, 2003; Hudson and Urquhart, 2015, 2022; Goel et al. 2017; Richard et al. 2022)⁷. For instance, exploring the effect of the Second World War (WWII) on the British stock market, Hudson and Urquhart (2015) find that the British stock market reacted negatively to WWII.

⁶ As a robustness check, we lag our market variable by one day, assuming that stock market responses are not immediate (Kaplanski and Levy, 2010; Hudson and Urquhart, 2015). We find similar results, not reported to save space (but available on request).

⁷ Taking the case of terrorist attacks, Arin et al (2008) find that terrorism has a significant and negative impact on global stock markets.

Table 1. Ukraine-Russia war and stock market index

	Stock market index			
	(I)	(II)	(III)	(IV)
Ukraine-Russia war	-0.929*** [0.10]	-0.848*** [0.10]	-0.925*** [0.11]	-0.853*** [0.10]
Number of observations	2469	2469	2469	2469
Number of countries	94	94	94	94
Country fixed-effect	No	No	Yes	Yes
Day fixed-effect	No	Yes	No	Yes
R2 (within)	0.083	0.208	0.083	0.209

Notes: Robust standard errors clustered at the country level are presented in brackets. ***, **, and * stand for significance at the 1%, 5%, and 10% levels, respectively.

To deepen our discussion, we investigate how the stock market returns evolved before and after the invasion of the Russian armies in Ukraine, i.e. on 24 February 2022. To do so, we organize our sample into two subsets from: (i) 22 January 2022 to 23 February 2022 (Pre-war period); (ii) 24 February 2022 to 3 March 2022 (Post-war period). The results of this analysis are reported in Table 2. We continue to observe a negative and significant relationship between the Ukraine-Russia war and stock market indices. Our results suggest that the impact of the war on the stock market indices was greater from 24 February onwards (-1.12) compared to the period before the invasion (-0.35).

Overall, our results highlight the impact of the war between Ukraine and Russia on world stock market returns. We observe a negative effect of the war on stock market indices and this effect has been exacerbated from the invasion of Russian troops in Ukraine, starting on 24 February 2022.

Table 2. The impact before and during the war

	Stock market index		
	All periods	Pre-war period	Post-war period
Ukraine-Russia war	-0.853*** [0.10]	-0.350*** [0.07]	-1.115*** [0.13]
Number of observations	2469	1947	522
Number of countries	94	94	94
Country fixed-effect	Yes	Yes	Yes
Day fixed-effect	Yes	Yes	Yes
R2 (within)	0.209	0.151	0.268

Notes: Robust standard errors clustered at the country level are presented in brackets.

***, **, and * stand for significance at the 1%, 5%, and 10% levels, respectively.

To check the robustness of our results, we performed two additional analyses:

(i) considering the Google search trends as our independent variable of interest (Table A); (ii) using the VIX index as the dependent variable of interest (Table B). As we can clearly see in the Tables, we continue to observe a negative effect of the Ukraine-Russia war on markets confirming the previous results.

4. Conclusion

This paper provides the first empirical evidence of the impact of the war between Ukraine and Russia on world stock market returns. In particular, we use data on stock market returns for 94 countries over the period from 22 January 2022 to 3 March 2022. Our results highlight significant and pronounced negative effects over time of the Ukraine-Russia war on world stock market indices. The results of this analysis are important for at least one reason: to

understand the financial impacts of the ongoing conflict so that investors, portfolio managers and policy makers can design effective financial strategies.

For potential future research, it might be interesting to examine the impact of the current conflict between Ukraine and Russia on commodity prices (such as gas, oil, wheat).

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Online Appendix

Table A. Google search trend results

	Stock market index			
	(I)	(II)	(III)	(IV)
Ukraine-Russia war	-0.014*** [0.00]	-0.014*** [0.01]	-0.013*** [0.00]	-0.014*** [0.01]
Number of observations	2469	2469	2469	2469
Number of countries	94	94	94	94
Country fixed-effect	No	No	Yes	Yes
Day fixed-effect	No	Yes	No	Yes
R2 (within)	0.008	0.207	0.008	0.207

Notes: Robust standard errors clustered at the country level are presented in brackets. ***, **, and * stand for significance at the 1%, 5%, and 10% levels, respectively.

Table B. VIX results

	Volatility index (VIX)		
	All periods	Pre-war period	Post-war period
Ukraine-Russia war	0.389*** [0.01]	0.235*** [0.00]	0.446*** [0.01]
Number of observations	2538	1974	564
Number of countries	94	94	94
Country fixed-effect	Yes	Yes	Yes
Day fixed-effect	Yes	Yes	Yes
R2 (within)	0.996	0.995	0.983

Notes: Robust standard errors clustered at the country level are presented in brackets.

***, **, and * stand for significance at the 1%, 5%, and 10% levels, respectively.