

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

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Abstract

As a topical issue, this paper studies the responses of world stock market indices to the ongoing war between Ukraine and Russia. Using daily stock market returns in a sample of 94 countries and covers the period from 22 January 2022 to 24 March 2022, we consistently document a negative relationship between the Ukraine-Russia war and world stock market returns. Our results point to a larger impact at the onset of war, especially during the first two weeks after the invasion of Ukraine on 24 February 2022. The reaction of global stock markets was weaker in the weeks that followed. Furthermore, we find that these effects were most pronounced for countries bordering Ukraine and Russia, as well as for those UN member states that demanded an end to the Russian offensive in Ukraine. Overall, we provide the first empirical evidence of the effect of the Ukraine-Russia war on world stock market returns.

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1. Introduction

“The war is expected to have a considerable impact on the global economy.”
Christine Lagarde, President of the ECB,
27 March 2022.

Several months after the deployment of 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 the global economy and in particular on the reaction of global financial markets. In this paper, we focus on the latter. In tandem with the loss of life and destruction of property, this attack has introduced new uncertainty into world stock markets (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 no empirical studies yet exploring the impact of the Ukraine-Russia war on world stock markets. This paper is an attempt 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 24 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. However, the reaction of global stock markets was weaker in the weeks following the invasion. Finally, we notice that the performance of the stock market indices was weaker for the countries bordering Ukraine and Russia, as well as for the UN member countries that demanded an end to the Russian offensive in Ukraine.

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. Second, by considering the Ukraine-Russia war, we extend the previous studies on the relationship between wars and stock markets, which focused mainly on the Second World War (such as Frey and Kucher, 2003; Hudson and Urquhart, 2015; Goel et al. 2017; Richard et al. 2022).

2. Data and model

The level of our analysis is country-day and covers the period from 22 January 2022 to 24 March 2022 (without weekends). 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. The daily world stock index data was obtained from the <https://www.investing.com/>, consisting of almost 3750 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 on search volumes related to the Ukraine-Russia war was downloaded from Wikipedia Trends⁴.

Using panel data, we analyze the reaction of world stock market returns to the Ukraine-Russia war. 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 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").

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. Our empirical

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, 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. Consequently, it allows the analysis of stock market responses (Moat et al. 2013).

analysis captures the impact of the Ukraine-Russia war on world stock market returns.

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. We organize our study in several steps by investigating: (i) the impact of the war on global stock market returns (Table 1); (ii) how global stock market responses evolved from the invasion (Table 2) and several weeks afterwards (Table 3); (iii) whether the effects differed according to geographical proximity to Ukraine and Russia (Table 4); (iv) whether stock market responses differed between neutral and condemning countries (Table 5).

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 indices⁵. This result highlights the sensitivity of world markets to the Ukraine-Russia war⁶. This result is consistent with previous analyses that have also found a negative relationship between

⁵ We recognize that a longer period of analysis would have been preferable in order to capture long-term effects. However, we believe that our results will go some way to initiating the debate on the financial impact of the war.

⁶ As a robustness check, we lag our stock 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).

conflict and stock market indices (e.g. Frey and Kucher, 2003; Hudson and Urquhart, 2015, 2022; Goel et al. 2017; Richard et al. 2022). 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 WWII⁷.

Table 1. Ukraine-Russia war and stock market index

	Stock market index			
	(I)	(II)	(III)	(IV)
Ukraine-Russia war	-1.412*** [0.42]	-0.889*** [0.33]	-1.466*** [0.46]	-0.858*** [0.26]
Number of observations	3747	3747	3747	3747
Number of countries	94	94	94	94
Country fixed-effect	No	No	Yes	Yes
Day fixed-effect	No	Yes	No	Yes
R2 (within)	0.001	0.017	0.001	0.017

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-invasion); (ii) 24 February 2022 to 24 March 2022 (Post-invasion). The results of this analysis are reported in Table 2. We still observe a negative relationship between the Ukraine-Russia war and global stock market indices. However, we highlight that this negative impact was significantly greater from the time of Russia's invasion of Ukraine compared to the period prior to 24 February 2022.

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

Table 2. The impact before and during the war

	Stock market index		
	All periods	Pre-invasion	Post-invasion
Ukraine-Russia war	-0.858*** [0.26]	-0.224 [0.36]	-1.001*** [0.20]
Number of observations	3747	1945	1802
Number of countries	94	94	94
Country fixed-effect	Yes	Yes	Yes
Day fixed-effect	Yes	Yes	Yes
R2 (within)	0.017	0.142	0.016

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 better understand the dynamics of the propagation of global shocks, we investigate how global stock market indices have adjusted their responses as the war persists (Table 3). To do so, we analyze the reactions of the stock markets week by week. While we reveal a stronger impact at the beginning of the war (especially two weeks after the invasion), this impact becomes weaker three to four weeks after, thus highlighting a recovery in global stock markets.

Table 3. The impact several weeks after the invasion

	Stock market index			
	The weeks after the invasion:			
	1 week	2 weeks	3 weeks	4 weeks
Ukraine-Russia war	-0.610*** [0.19]	-1.121* [0.57]	-0.888** [0.36]	-0.858*** [0.26]
Number of observations	2375	2811	3266	3747
Number of countries	94	94	94	94
Country fixed-effect	Yes	Yes	Yes	Yes
Day fixed-effect	Yes	Yes	Yes	Yes
R2 (within)	0.215	0.017	0.017	0.017

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.

Furthermore, we complete our analysis by assessing whether the impact is stronger in countries geographically close to Ukraine and Russia. We find that the stock market indices of countries geographically close to the conflict have been the most impacted by the war (Table 4).

Table 4. Nearby vs. geographically distant countries

	Stock market index	
	Nearby countries	Distant countries
Ukraine-Russia war	-7.780** [3.41]	-0.901** [0.37]
Number of observations	724	3023
Number of countries	18	76
Country fixed-effect	Yes	Yes
Day fixed-effect	Yes	Yes
R2 (within)	0.36	0.022

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.

Finally, we examine whether the impact of the war was stronger for those UN member countries that condemned the invasion compared to countries that remained neutral (e.g. China, India, South Africa)⁸. We still observe a negative stock market reaction for both the countries that condemned the invasion and those that remained neutral. However, the impact was significantly greater for the countries that condemned the invasion (Table 5).

Table 5. Neutral countries vs. countries that condemned the invasion

	Stock market index	
	Neutral countries	Condemn countries
Ukraine-Russia war	-0.266*	-0.944***
	[0.14]	[0.29]
Number of observations	711	3036
Number of countries	19	75
Country fixed-effect	Yes	Yes
Day fixed-effect	Yes	Yes
R2 (within)	0.106	0.021

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.

4. Conclusion

This paper provides the first empirical evidence of the impact of the war between Ukraine and Russia on world stock market returns. Using daily data on stock returns for a sample of 94 countries over the period from 22 January 2022 to 24 March 2022, our results show significant negative effects of the Ukraine-Russia war on global stock indices. The results of this analysis are

⁸ For more information on the UN resolution demanding an end to the Russian offensive in Ukraine: <https://news.un.org/en/story/2022/03/1113152>

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.

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