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RESEARCH ARTICLE

The political economy of foreign fighter death in the Russo-Ukrainian War: the role of institutions, politics, and international trade

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Abstract
This empirical study extends the public choice literature on the allocation of death during war by examining the political economy of foreign fighter deaths in the Russo-Ukrainian War since the 24 February 2022 invasion. The study explores the roles played by various demographic factors, military institutions, and international trade relations in determining the number of foreign fighters from a variety of countries who have died in support of either Ukraine or Russia during the Russo-Ukrainian War. Unlike other related studies, this study also investigates the importance of, and finds evidence in support of, both economic freedom and a robust democracy in shaping the choices made by individuals around the globe to venture to, and die fighting on, the battlefields of Ukraine.

Keywords: defence economics; economic freedom; institutions; international trade; politics and war

JEL Codes: D72; D73; D74; F51; F53; F55

Introduction

On 24 February 2022, Russia escalated its conflict with Ukraine, one that actually began in 2014, by invading Ukraine along three separate fronts in what was the largest attack on a European state since World War II. The Russo-Ukrainian War began with a pre-dawn declaration of war by Russian President Vladimir Putin, while the first day closed with Ukrainian President Volodymyr Zelensky's general mobilization order to ensure the defence of the country (Zinets and Vasovic, 2022). By the end of the first day, an estimated 100,000 Ukrainians had fled their homes, with many crossing into Romania, Moldova, Poland, and Hungary. Zelensky called on Ukraine's male population to remain and defend their country, adding that arms would be provided to anyone prepared to fight (Zinets and Vasovic, 2022). Since Zelensky's 24 February 2022 plea for Ukrainians to defend against the invasion, thousands of *foreign* fighters have poured into the theatre of war, with some supporting Ukraine while others have sided with Russia. Hundreds of these foreign fighters have since perished in the war, with most of these deaths occurring in support of Ukraine's defence against Russia.

An intriguing stream of public choice research that has developed over the past few decades that examines whether the disposition of military casualties during conflicts is, at times, impacted by the political desires of the government officials who are in a position to influence that disposition (Anderson and Tollison, 1991; Cebula and Toma, 2006; Crisp and Mixon, 2011; Goff and Tollison, 1987; Mixon, 2013; Mixon and Treviño, 2002; Zerkle, 2009). The present study seeks to extend that

stream of research in a novel way, namely, by examining the political economy of foreign fighter deaths in the Russo-Ukrainian War since the 24 February 2022 invasion.[1] In doing so, this study most closely follows Mixon's (2013) international public choice approach to the allocation of deaths in the recent Afghanistan War.[2] As in Mixon's (2013) analysis of the allocation of deaths across minor allied countries in Afghanistan, this study explores the role played by demographic factors, military institutions, and international trade relations in determining the number of foreign fighters from various countries who have died in support of either Ukraine or Russia during the Russo-Ukrainian War. Unlike Mixon (2013), however, we also examine the importance of economic freedom and democracy in shaping the choices made my individuals around the globe to venture to, and die fighting in, Ukraine.

Prior related literature: a brief review

The stream of public choice literature that is most relevant to the current study has developed along two separate but related branches. One of these branches involves the use of political institutions and power to manipulate the votes of members of the military in a way that favours incumbents. During times of military conflict, this process may even involve soldiers' access to the ballot box in a democratic election. The second of these branches involves the use of political influence in either the executive and/or the legislative arena in order to impact the disposition, and ultimately the deaths, of soldiers in the field. Each of these branches in the public choice literature is discussed in turn below.

Public choice and soldiers' access to the ballot box

Anderson and Tollison (1991) point out that incumbent President Abraham Lincoln won re-election in the U.S. presidential election of 1864 over challenger George McClellan by a comfortable popular vote margin – 55–45%. They also argue that from an Electoral College vote perspective, the Union soldier vote played a pivotal role in Lincoln's victory, as he carried this group by a margin of 77.6–22.4% over McClellan (Anderson and Tollison, 1991; Crisp and Mixon, 2011). Anderson and Tollison provide primary source evidence that Lincoln facilitated furloughs for Union soldiers to return home to vote if they lived in states that did not allow absentee ballots. Where absentee ballots were allowed, Lincoln took actions to smooth the way for Republican election agents to visit soldiers in the field, while at the same time Lincoln ordered obstacles be placed before Democratic election agents who sought to deliver absentee ballots to Union soldiers at the front (Anderson and Tollison, 1991). As Anderson and Tollison (1991) indicate, this type of manipulation of the soldier vote is credited for providing Lincoln with winning popular vote margins in Connecticut, Illinois, Indiana, Maryland, New York, and Pennsylvania. The Electoral College votes from these states alone gave Lincoln more than 86% of the necessary Electoral College votes for a majority in the 1864 presidential election. Had the soldier vote not been facilitated by Lincoln and others, these states may well have gone to McClellan instead of Lincoln, thus giving George McClellan, Lincoln's Democratic opponent, a slim Electoral College vote margin in 1864 (Anderson and Tollison, 1991).[3]

Mixon and Treviño (2002) examine, through a public choice lens quite similar to that used by Anderson and Tollison (1991), historical accounts indicating that British Prime Minister Winston

[1]A recent issue of the *Journal of Public Finance and Public Choice* includes a symposium on public choice aspects of the Russo-Ukrainian War. However, none of these studies, including either Hebert and Krasnozhon (2024) or Trantidis (2024), examines this particular public choice aspect of that conflict.

[2]Mixon (2013) focused on the determinants of battlefield casualties across the countries allied with the United States in its war against Al Qaida and the Taliban. These included, but were not limited to, receipt by that country of foreign aid and/or military aid from the United States, the maintenance of free trade agreements with the United States, and the seats of institutional power held by individuals from that country at the top of the United Nations bureaucratic hierarchy.

[3]Crisp and Mixon (2011) extend research by Anderson and Tollison (1991) by examining how Lincoln rewarded those in his orbit who facilitated his 1864 election win. In doing so, Crisp and Mixon (2011) employ elements of the modern theory of bureaucracy (Breton and Wintrobe, 1982, 1986).

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Churchill and his party allies had considerable influence over the date/timing of the British National Election, and, to some extent, the ability of the British military to cast votes in any election that was held before the official end of World War II. It was generally accepted that the British military favoured Churchill's Labour Party opponents given that they believed that a Labour Party victory would lead to a more rapid demobilization (Mixon and Treviño, 2002). As a result, historical accounts of what were arguably Churchill's efforts to manage the military vote in the 1945 national election in a way favourable to him and his political allies are viewed by Mixon and Treviño (2002) as a rational response to the political environment at the time.[4]

Zerkle (2009) also follows the Anderson and Tollison (1991) approach in asserting that what was expected to be a close wartime U.S. presidential election in 2004 gave incumbent U.S. President George Bush great incentive to treat wartime policy with an eye towards re-election. That is, the Bush Administration may have brought home reserve troops in key states in order to garner votes of reservists and reservists' families and communities. As Zerkle (2009) explains, the mechanism operates through voters gaining more support for the war in Iraq by witnessing troops returning largely unharmed. To determine a state's expected importance in the 2004 election, Zerkle (2009) uses political polling data, with expected electoral closeness being measured by counting the number of times a political poll flipped for one candidate versus the other.[5] Econometric tests indicate that each flip in a state poll correlates to 138 troops returned to that state over and above the average experienced by the non-flip states, *ceteris paribus* (Zerkle, 2009).

Public choice and the allocation of soldier deaths

As Mixon (2013) points out, an intriguing stream of public choice research has developed over the past few decades that examines whether the disposition of military casualties during conflicts is, at times, influenced by the political desires of the government officials who are in a position to influence that disposition (Anderson and Tollison, 1991; Cebula and Toma, 2006; Crisp and Mixon, 2011; Goff and Tollison, 1987; Mixon, 2013; Mixon and Treviño, 2002; Zerkle, 2009).[6] The seminal study by Goff and Tollison (1987) investigates the probability of death facing U.S. troops during the Vietnam War (1965–1971) against the hypothesis that the political influence of various U.S. Representatives and Senators was wielded to favour the safety of their own constituents-soldiers, such as placement in roles farther from the front lines of the conflict. Econometric evidence presented in that study suggests that casualty rates were lower, *ceteris paribus*, in states where U.S. Representatives and Senators held the highest seniority in the U.S. Congress and were perhaps able to secure for favoured constituents a deployment assignment that was safer than those faced by other infantry (Goff and Tollison, 1987). Other results presented by Goff and Tollison (1987) suggest that casualty rates were also lower among soldiers from states where the link between elected representatives and the defence industry was strong, thus highlighting the role of rent seeking theory (Krueger, 1974; Posner, 1975; Tullock, 1967) in this political process.

[4]Election simulations presented by Mixon and Treviño (2002) suggest that Churchill would have had to work to prevent anywhere from 78.0 to 81.5% (approximately) of the total military vote, which represents 1.95 million to 2.04 million (approximately) military votes, in order to provide a Conservative alliance victory in 1945. Thus, it is unsurprising that any attempt by Churchill to manipulate the election outcome ultimately failed.

[5]As Zerkle (2009) explains, changes in the leader in an election poll, referred to as 'flips', are counted based on the initial election poll within a state. For instance, if the first poll in a state projected that Candidate A is expected to win the election, the first subsequent poll favoring Candidate B counts as one 'flip' (i.e. the first 'flip'). Going forward with the above example, if Candidate B leads in the next three election polls (i.e. elections polls two through four), then no additional 'flips' would have occurred (Zerkle, 2009). However, if Candidate A were to lead again in the fifth election poll, then there would have been two 'flips' thus far in this state. Following this process going forward, the number of 'flips' in the state are summed for a total for that state (Zerkle, 2009).

[6]This genre of the literature includes studies of the allocation of death outside of the military context, such as the public choice examination by Mixon (2015) of the allocation of death during the Salem witch trials. This literature stream is also at least tangentially related to studies that test public choice models of resource allocation in a legislative setting, such as Stroup's (1998) empirical analysis of the distribution of Department of Defense personnel – both military and civilian – across states.

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Following the Goff and Tollison (1987) approach, Cebula and Toma's (2006) analysis of *Operation Iraqi Freedom* follows the template established in Goff and Tollison (1987) by positing that presidential campaign strategies are influenced by the anticipated closeness of the election outcome across states in the Electoral College. Econometric results presented in the study indicate that the greater the competition for the electoral votes in a state during the 2004 U.S. Presidential election, the relatively fewer fatalities that state suffered. Additionally, Cebula and Toma report that fatalities were lower in states with U.S. Senate representation on that chamber's Armed Services Committee (Cebula and Toma, 2006). Next, the study by Mixon (2013), which follows the approach of Goff and Tollison (1987) and the subsequent study by Cebula and Toma (2006) and is most closely linked to the current one, investigates the allocation of deaths among the minor countries (i.e. countries other than the United States and England) involved in the Afghanistan War, also known as *Operation Enduring Freedom*, against the backdrop of political influence exerted from various quarters. Econometric results presented in Mixon (2013) suggest that longer tenure in high-ranking posts within the United Nations, such as U.N. Secretary General, U.N. Deputy Secretary General, and U.N. General Assembly President, provided the political influence necessary to reduce military deaths among the minor participating countries that occupy them. The results also suggest that maintaining a free trade relationship with the U.S. or being the recipient of U.S. economic and military aid puts political pressure on countries to place more combatants in harm's way in a war being led by the U.S. (Mixon, 2013).

Political economy of foreign fighter flows

Only a few academic studies have examined the determinants of foreign fighter flows into military conflicts, and these typically focus on conflicts in the Middle East. For example, Krueger (2006) examines the determinants of foreign fighters' support of Iraq in its post-9/11 war against the U.S. and its allies. To do so, Krueger (2006) analyses data on the country of origin of 311 foreign fighters who were captured from April to October of 2005. In each specification tested, the results suggest on the one hand a significantly positive relationship between the size of the origin country's population and the number of its citizens who joined Iraq's war effort and on the other hand a significantly negative relationship between the distance from the origin country's capital city to Iraq's capital city (Baghdad) and the number of its citizens who joined Iraq's war effort. As expected, the percentage of the host country's population that is Muslim is positively and significantly related to foreign fighter flows from that country, while the degree of civil liberties present in the host country is negatively and significantly related to foreign fighter flows from the country (Krueger, 2006). Lastly, from a different perspective, Krueger (2006) also reports that a higher infant mortality rate in a given country of origin is associated with significantly fewer of that country's citizens being captured in Iraq, whereas in one specification a higher literacy rate has a negative and significant effect on the number of captured insurgents from a given country.

Related studies by Pokalova (2019) and Benmelech and Klor (2020) examine the number of foreign fighters who joined the Islamic State of Iraq and Syria (ISIS) in its effort to establish a caliphate in the Middle East. Pokalova (2019) employs a dataset of 33,815 foreign fighters originating from 103 countries and finds that more foreign fighters originate in countries with larger populations, higher percentages of Muslims, and greater human development and religious diversity. The study also reports that countries with higher unemployment and greater internet penetration rates, along with those where youths account for greater shares of the overall population, produce more foreign fighters (Pokalova, 2019). Next, Benmelech and Klor (2020) report that about 30,000 fighters from at least 85 countries joined the Islamic State of Iraq and Syria (ISIS) through December 2015 in its effort to establish a caliphate. Although a vast majority travelled from the Middle East, many came from Europe, the United States, Canada, Australia, and New Zealand. The main finding in Benmelech and Klor (2020) is that the size of a country's Muslim population positively and significantly impacted the number of ISIS foreign fighters originating from the country. They also find that a host country's

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GDP per capita and its unemployment rate are positively and significantly associated with the number of ISIS fighters supplied by that country (Benmelech and Klor, 2020). Benmelech and Klor (2020) also report that income inequality in a given country is associated with fewer ISIS foreign fighters from that country. Finally, a recent study by Koch (2021) examines the various ideological motivations, both left and right, of foreign fighters who joined the fight *against* ISIS. This study, however, does not include statistical examination of the tendency of foreigners to journey to Syria and Iraq in order to assist other anti-ISIS warriors.

Public choice and the Russo-Ukrainian War: framing the hypotheses

As stated above, this study endeavours to explain the variations in the number of foreign fighters who have died in support of either Ukraine's defence or Russia's invasion since early 2022. The former number is specified from an econometric perspective as $UDeaths_i$, or as the number of individuals from country i who have died in support of Ukraine during the Russo-Ukrainian War. The latter is specified as $RDeaths_i$, or as the number of individuals from country i who have died in support of Russia during the Russo-Ukrainian War. Each of these is hypothesized to be a function of a number of demographic, military institutions, international trade, and economic/political institutions variables that are explained in the subsections that follow.

Demographic effects

Following Mixon (2013), travelling from one's home to a battlefield in Ukraine is at best a difficult logistics process. Thus, one would expect that the distance between Kyiv and the capital of country i (in miles) would negatively impact the number of citizens who are able to journey from country i to the battlefields in Ukraine (Krueger, 2006; Mixon, 2013). Thus, one would expect that the number of foreign fighter battlefield deaths in support of either Ukraine or Russia would be negatively related to $Distance_i$, *ceteris paribus*. This expectation would hold whether or not citizens who choose to become foreign fighters travel to Ukraine as private citizens or do so with government, and possibly military, assistance (Mixon, 2013). The latter possibility is discussed in greater detail in the next subsection of this study.

Next, $MedInc_i$, or real median income (2021, PPP) in country i is included in both econometric specifications (Benmelech and Klor, 2020; Cebula and Toma, 2006; Goff and Tollison, 1987; Krueger, 2006; Mixon, 2013; Pokalova, 2019). Given the expense of travelling from country i to Ukraine, a relatively greater number of private citizens who choose to do so in an effort to support either Ukraine or Russia may be expected from relatively high-income countries than from relatively low-income countries, *ceteris paribus*. On the other hand, given that the opportunity cost of foreign fighter participation is greater for high-income individuals than for lower-income individuals, it may be the case that relatively fewer private citizens who choose to do so in an effort to support either Ukraine or Russia may be expected from relatively high-income countries than from relatively low-income countries, *ceteris paribus*. Both of these expectations are, however, muddled by the fact that Putin offers various forms of compensation for foreign fighters who support Russia.[7] As such, no *a priori* is offered regarding the relationship between $MedInc_i$ and either $UDeaths_i$ or $RDeaths_i$. Lastly, following Krueger (2006), Mixon (2013), and Pokalova (2019), the population of each country in the sample is accounted for by the variable Pop_i, which is expected to retain a positively signed coefficient in any model given the straightforward statistical expectation that more foreign fighters will originate, and ultimately die on the battlefields of Ukraine, from countries with larger populations, *ceteris paribus*.

[7]Between May of 2022 and May of 2023, Putin admittedly directed $1 billion to support the Wagner Group, a paramilitary group that has supported Russia's war efforts using foreign fighters (Seddon *et al*., 2023). This appropriation, and others like it, allow the Wagner Group to compensate its fighters generously. In January of 2024, Putin began issuing contracts allowing foreign fighters to gain Russian citizenship upon completion of one year of service (Trevelyan, 2024).

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Military institution effects

As explained in Mixon (2013), there are a number of military-related institutional variables that may explain how many of a country's citizens participate, and ultimately die, in the Russo-Ukrainian War. The dummy variable $NATO_i$ is equal to 1 for countries that were members of the North Atlantic Treaty Organization (NATO) at the beginning of the Russo-Ukrainian War, and 0 otherwise. Whether or not that country maintains military conscription and the size of a country's military are two additional examples of military-related institutional variables that may help to explain the number of battlefield deaths from country *i*. Thus, the econometric specifications include both $Conscription_i$ and $MilitarySize_i$, with the former being a dummy variable equal to 1 if country *i* maintains a system of military conscription, and 0 otherwise, while the latter is the number of active soldiers in country *i*'s standing army. A fourth institutional variable in this category is $MilitarySupport_i$, which is equal to the amount of military support (in €billions) provided by country *i* to Ukraine.

As Mixon (2013) observes, the variable $NATO_i$ accounts for countries with close geopolitical and national security ties to the United States, the country that is, along with Poland, arguably one of the strongest proponents of Ukraine's defence against the Russian invasion. NATO members such as France, Germany, and Italy have historically benefitted from close connections to the United States, particularly in terms of national defence (Mixon, 2013). As such, citizens from NATO countries may be more likely than others to venture to Ukraine in order to support its defence effort against Russia. At the same time, one would not expect citizens from NATO countries to travel to Russia, and ultimately die in support of, its February of 2022 invasion of Ukraine. Thus, we expect that the parameter estimate attached to the variable $NATO_i$ will be positively signed in the $UDeaths_i$ specification but negatively signed in the $RDeaths_i$ specification, *ceteris paribus*.

Next, $Conscription_i$ and $MilitarySize_i$ may relate to the likelihood that a country's citizens have prior military experience and adhere to a military ethos. If so, one would expect larger numbers of citizens from countries that maintain conscription and/or have larger standing armies to venture across the globe to support either country, Ukraine or Russia, in the Russo-Ukrainian War. These variables may also relate to the likelihood that a country's active-duty forces are voluntarily used, either overtly or covertly, to aid one side or the other in the conflict. Following Mixon (2013), larger militaries afford countries with the capacity to support military engagements abroad. Countries with relatively large militaries, and/or that maintain conscription, also likely have national security concerns. Such countries stand to benefit, in a learning-curve sense, from occasional military engagements abroad. As such, countries with relatively large militaries, and those that maintain conscription of soldiers, are expected to support either country, Ukraine or Russia, in the Russo-Ukrainian War, *ceteris paribus*, than are countries with relatively small militaries and that do not employ conscription. Given these arguments, we expect that the parameter estimates attached to both $Conscription_i$ and $MilitarySize_i$ will be positively signed in both the $UDeaths_i$ and $RDeaths_i$ specifications, *ceteris paribus*.

Lastly, as in the case of NATO membership, any financial support for Ukraine's war effort by country *i* would likely be seen by the United States as an act of loyalty. Thus, citizens from countries loyal to the United States are expected to be more likely than citizens of other countries to travel to Ukraine in order to join Ukraine's military defence against Russia. Similarly, citizens from countries that are not so loyal to the United States, as indicated by the lack of financial support from their governments of Ukraine's defence, are expected to be more likely than citizens from countries that donate financially to Ukraine's defence to travel to Ukraine in order to join Russia's invasion of Ukraine. Given that the decisions made by citizens around the globe to fight in Ukraine will be linked to battlefield deaths there, one would expect the parameter estimate attached to the variable $MilitarySupport_i$ will be positively signed in the $UDeaths_i$ specification, but negatively signed in the $RDeaths_i$ specification, *ceteris paribus*.

International trade effects

Four international trade-related variables are also included in the econometric specifications. These are $OECD_i$, $TradeAgreementU_i$, $TradeAgreementR_i$, and $RussianEnergy_i$. The first of these, $OECD_i$, is a

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dummy variable equal to 1 if country *i* was a member of the Organization of Economic Co-operation and Development (OECD) at the outset of the 2022 Russian invasion of Ukraine, and 0 otherwise. The OECD is a 60-year-old organization of 38 countries whose stated goal is to shape policies that foster prosperity, equality, opportunity, and well-being of a country's citizens. Headquartered in Paris, France, the OECD's most prominent founding members are the United States, United Kingdom, France, and Germany, each of which has publicly supported Ukraine in its war with Russia. To the extent that this support is inculcated in the populations of these 38 countries, one would expect, *ceteris paribus*, $OECD_i$ to positively impact $UDeaths_i$, but negatively impact $RDeaths_i$.

The next two international trade-related variables – $TradeAgreementU_i$ and $TradeAgreementR_i$ – are dummy variables equal to 1 if country *i* maintains a separate trade agreement with Ukraine, in the case of $TradeAgreementU_i$, and/or with Russia, in the case of $TradeAgreementR_i$, and 0 otherwise. If these relationships translate into support for the trading partner's military endeavours, the $TradeAgreementU_i$ will be expected to positively impact $UDeaths_i$, whereas $TradeAgreementR_i$ will be expected to positively impact $RDeaths_i$, *ceteris paribus*. The final international trade-related variable, $RussianEnergy_i$, is equal to the annual value (in $billions) of oil, gas, and/or coal imported by country *i* from Russia. Several countries are highly dependent on Russia for such forms of energy. One would expect, therefore, that the size of a country's energy bill from Russia will negatively (positively) impact $UDeaths_i$ ($RDeaths_i$), *ceteris paribus*.

Economic and political institution effects

Unlike prior studies by Goff and Tollison (1987), Cebula and Toma (2006), and Mixon (2013), this paper considers the impact of certain important economic and political institutions. The first of these is economic freedom in country *i*, as measured by the Heritage Foundation's Index of Economic Freedom.[8] Citizens from countries positioned relatively high on this index likely possess an affinity for the economic freedom they enjoy. As such, they likely sympathize with the recent plight of Ukrainians and, in some cases at least, may feel a desire to venture to the battlefield in order to provide military support for Ukraine's defence. On the other hand, citizens from countries positioned lower along this index will likely constitute a relatively large portion of the foreign fighters who are currently participating in Russia's invasion of Ukraine. As such, and consistent with Krueger (2006), $EconFreedomIndex_i$ is likely to positively impact $UDeaths_i$, but negatively impact $RDeaths_i$, *ceteris paribus*.

The second of these political institutions is the strength of democracy in country *i*, as measured by *The Economist's* Global Democracy Index.[9] As with economic freedom, citizens from countries scoring relatively high along this index likely enjoy the various democratic principles of government. Thus, they likely favour and support the political institutions that the Ukrainians have expressed an interest in developing. As before, in some cases they may feel a desire to venture to the battlefield in order to provide military support for Ukraine's defence. On the other hand, many citizens from countries scoring lower along this index will likely venture to Ukraine to support Russia's invasion of that country. As such, and again consistent with Krueger (2006), $DemocracyIndex_i$ is expected to positively impact $UDeaths_i$, but negatively impact $RDeaths_i$, *ceteris paribus*.

Data, empirical approach, and econometric results

Both regression specifications (i.e. that corresponding to $UDeaths_i$ and that corresponding to $RDeaths_i$) utilize data from 131 countries. The list of countries included in the study appears in

[8]The Heritage Foundation's Index of Economic Freedom is based on 12 quantitative and qualitative factors of economic freedom, including the rule of law, government size, regulatory efficiency and open markets.

[9]*The Economist*'s Global Democracy Index is based on 60 indicators that capture a country's electoral process and pluralism, civil liberties, functioning of government, political participation and political culture.

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Table A1 of the Appendix. A breakdown of foreign fighter deaths (as of December 2023) by country of origin is provided in Table A2 of the Appendix.[10] Data for the distance between Kyiv and the capital of country *i*, or $Distance_i$, are measured in miles and come from the website DistanceFromTo.net. Data for $MedInc_i$, or real median income (2021, PPP) in country *i*, and the population of country *i* (Pop_i) are collected from *World Population Review*. Members of NATO are found on that organization's website. Following the United Nations, information on the maintenance of military conscription across the countries in the dataset is found at NationMaster.com. Members of the OECD are found on that organization's website. Data for the size of country *i*'s standing army (in millions) are found in *World Population Review*, whereas those pertaining to financial support (in €billions) from country *i* for Ukraine's defence are collected from the Kiel Institute for the World Economy. Information on the various individual trade agreements between country *i* and either Ukraine or Russia is collected from the International Trade Administration of the U.S. Department of Commerce and the Congressional Research Service. Data for the value of Russian energy imported by country *i* are collected from Conte (2023). Information on economic freedom in country *i*, and the robustness of country *i*'s democracy, comes from the Heritage Foundation and *The Economist*, respectively. Lastly, data on the number of foreign fighter deaths used to compile $UDeaths_i$ and $RDeaths_i$ are taken from numerous news reports.

Summary statistics

As indicated in Table 1, about 1.5 times as many foreign fighters have died in support of Ukraine as have died supporting Russia's invasion. Also, the average distance between the capitals of the countries in the sample and Kyiv is 3,276 miles, the average population across the countries in the sample is about 56.8 million, and the real median income of the typical country is $5,734. Next, about 21% of the countries in the sample are members of NATO, while nearly 14% of countries maintain military conscription. The mean size of the standing armies in the sample is about 131,000 soldiers, and the average financial contribution to Ukraine's defence during the recent conflict is €0.57 billion. In terms of the economic variables, just over 27% of the countries in the sample are members of the OECD, while 11.5 and 3.1% of the countries maintain a trade agreement with Ukraine and Russia, respectively. Lastly, the typical country in the sample purchases about $0.62 billion in Russian energy annually. Among the countries in the sample, the mean overall economic freedom score is almost 61, while the democracy rating of the typical country is just over 5.5.

Correlation coefficients

Next, we examined a correlation matrix containing all of the variables included in this study. Of the 78 correlation coefficient estimates not involving either *UDeaths* or *RDeaths*, 63 fall between ±0.400. Even so, there are a number of correlations that fall outside of this range. For example, there are relatively large positive correlations among *MedInc*, *NATO*, *OECD*, *EconFreedomIndex*, and *DemocracyIndex*. The positive correlation between the last two variables in this list is not unexpected, given research by Leeson and Dean (2009) and Leeson *et al*. (2012) indicating that a country's ability to reform its political institutions in a particular manner may depend on its ability to reform its economic institutions in a particular manner as well, and/or vice-versa. It is also consistent with the combination of

[10]These deaths are catalogued by *Wikipedia*, with sources noted in each case (see https://en.wikipedia.org/wiki/Casualties_of_the_Russo-Ukrainian_War#:~:text=by%2014%20December.-,Foreign%20fighters%20and%20volunteers,fighting%20on%20the%20Ukrainian%20side). Sources include, but are not limited to, ABC News, *Anambay News*, *Army Times*, BBC News, *Business Insider*, CNN, *The Daily Beast*, *The Guardian*, *The Kyiv Independent*, Memorial International Legion Ukraine, Odishi TV, *The New York Times*, *Pulzo*, *Taiwan News*, *La Teja*, *The Telegraph*, *Ukrainska Pravda* and *The Washington Post*. Even with these prominent sources, we accept the likelihood that much more is accurately known about the number of foreign fighters who have died in support of Ukraine than about the number of foreign fighters who have died in support of Russia.

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Table 1. Variable descriptions and summary statistics

Variable	Variable description	Mean	Std Dev	*nobs*
$UDeaths_i$	Number of individuals from country *i* who have died in support of Ukraine during the Russo-Ukrainian War	2.466	7.923	131
$RDeaths_i$	Number of individuals from country *i* who have died in support of Russia during the Russo-Ukrainian War	1.649	8.192	131
$Distance_i$	Distance (miles) between the capital city of country *i* and Kyiv, Ukraine	3,276	2,311	131
$MedianInc_i$	Real median income (2021, PPP) in country *i*	$5,734	$5,821	121
Pop_i	Population (in millions) of country *i*	56.826	179.98	131
$NATO_i$	Dummy variable equal to 1 if country *i* was a member of NATO at the beginning of the Russo-Ukrainian War, and 0 otherwise	0.214	0.412	131
$Conscription_i$	Dummy variable equal to 1 if country *i* maintains use of military conscription, and 0 otherwise	0.137	0.346	131
$MilitarySize_i$	Number of active soldiers (in millions) in country *i*'s standing army	0.131	0.278	130
$MilitarySupport_i$	Military support (in €billions) provided by country *i* to Ukraine	0.570	3.842	131
$OECD_i$	Dummy variable equal to 1 if country *i* was a member of the OECD at the beginning of the Russo-Ukrainian War, and 0 otherwise	0.275	0.448	131
$TradeAgreementU_i$	Dummy variable equal to 1 if country *i* maintains an individual trade agreement with Ukraine, and 0 otherwise	0.115	0.320	131
$TradeAgreementR_i$	Dummy variable equal to 1 if country *i* maintains an individual trade agreement with Russia, and 0 otherwise	0.031	0.173	131
$RussianEnergy_i$	The annual value (in $billions) of oil, gas and/or coal imported by country *i* from Russia	0.624	3.123	131
$EconFreedomIndex_i$	Country *i*'s economic freedom index	60.774	11.341	125
$DemocracyIndex_i$	Country *i*'s democracy index	5.528	2.368	129

earlier work by Barro (1996, 1997), indicating that democracy is a normal good, and a plethora of studies that find a positive relationship between economic freedom and per capita income (see Berggren, 2003; Gwartney *et al.*, 2004). Next, the correlations between *MedInc* and the other four variables range from +0.540 to +0.738. Similarly, the correlations between *NATO* and the other four variables range from +0.470 to +0.638, while those between *OECD* and the other four variables range from +0.638 to +0.738. Lastly, correlations between *EconFreedomIndex* and the other four variables range from +0.470 to +0.793, whereas the correlations between *DemocracyIndex* and the other four variables range from +0.477 to +0.793. In addition to these correlations, there are some other relatively large correlations (in absolute value) involving *Pop*, *MilitarySize*, *MilitarySupport*, and *RussianEnergy*. As a result, we offer results from various specifications of our econometric model in order to explore the impact of multicollinearity on the individual results.

Empirical approach

Modelling the distribution of deaths among foreign fighters in the Russo-Ukrainian War requires data on the number of fighters from country *i* who are killed during the Russo-Ukrainian War supporting

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either the Ukrainian defence (i.e. $UDeaths_i$) or the Russian invasion (i.e. $RDeaths_i$). Either dependent variable, $UDeaths_i$ or $RDeaths_i$, is both observed and discrete, thus requiring a limited dependent variables approach. Following Cameron and Trivedi (1998), a Poisson model, estimated by maximum likelihood, is employed. In order to measure the predictive power of the model, we report the R_d^2, which is based on residual deviances from a Poisson regression including all of the regressors and one including only a constant term (Cameron and Trivedi, 1998). The Poisson regression results for the allocation of foreign fighter deaths in the Russo-Ukrainian War are provided in Table 2, with estimates from the $UDeaths_i$ specifications occupying the left-hand side of the table and estimates from the $RDeaths_i$ specifications shown on the right-hand side of the table. Results for all seven econometric specifications in each case are jointly significant. As shown at the bottom of Table 2, the R_d^2 statistics range from 0.401 to 0.593 for the $UDeaths_i$, and from 0.608 to 0.730 for the $RDeaths_i$ specifications. Although each of these ranges is noteworthy, care should be taken in comparing any one to the others given that the number of observations employed varies as regressors are added to or subtracted from the unrestricted specification.

Demographic effects

In terms of the demographic factors, distance from the theatre of war (i.e. Ukraine) matters, as in Krueger (2006). The variable *Distance* is, *ceteris paribus*, negatively signed and statistically significant across all seven of the specifications on the left-hand side of Table 2. This suggests that distance from the battlefield significantly hampers the ability and/or willingness of foreign fighters to fight, and ultimately to die on the battlefield, in support of Ukraine's defence against Russia. The first two coefficient estimates attached to *Distance* on the right-hand side of Table 2 are also negatively signed. In the first of these two cases, it is statistically significant, suggesting that distance from the battlefield significantly hampers the ability of foreign fighters to fight, and ultimately die on the battlefield, in support of Russia's offensive against Ukraine.

Next, only one specification in each case includes *MedInc*, and, consistent with Goff and Tollison (1987) and Cebula and Toma (2006), the coefficient estimate attached to it is negatively signed in each case. This suggests that, regardless of which side is being supported, foreign fighters who die on the battlefields of Ukraine tend to arrive there from lower income countries. In the case of support for Russia, the income effect is significantly negative. Given that the correlation coefficient estimates indicate relatively high correlations between *MedInc* and *NATO*, *OECD*, and the two index variables, *EconFreedomIndex* and *DemocracyIndex*, a version of the base model without these four variables was estimated in each case in order to evaluate the impact that multicollinearity has on the prior results. Although the results in Table 2 reveal that *Pop* positively and significantly impacted *RDeaths*, as found in Krueger (2006), Mixon (2013), and Pokalova (2019). Results from this auxiliary specification suggest that *Pop* is not significantly related to foreign fighter deaths in support of either country, while *MedInc* is positively and significantly related to foreign fighter deaths in support of Ukraine and negatively and significantly associated with foreign fighter deaths in support of Russia.

Military institution effects

With regard to the military variables, there are fewer foreign fighter deaths from NATO countries than from other countries, *ceteris paribus*, regardless of which combatant country is being supported. This result is statistically significant in five of the seven specifications in the case of support for Ukraine, and in all seven specifications in the case of support for Russia. In the case of battlefield deaths in support of Ukraine's defence, NATO countries contribute only 38.5–54.0% of the battlefield deaths that non-NATO countries contribute, *ceteris paribus*. In the case of battlefield deaths in support of Russia's invasion, NATO countries contribute only 5.0–21.7% of the battlefield deaths that non-NATO countries contribute, *ceteris paribus*. Interestingly, an auxiliary specification, one that is not included in Table 2, that omits five variables that are highly correlated with *NATO* – *Dist*,

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MedInc, *OECD*, *EconFreedomIndex*, and *DemocracyIndex* – was also estimated. In this case, the variable *NATO* is positively signed in the *UDeaths* specification, although it is not statistically significant at acceptable levels. This result suggests that NATO membership is effectively unrelated to the geographic origin of the foreign fighters who have died in support of Ukraine's defence.[11] On the other hand, the coefficient attached to *NATO* in the *RDeaths* specification remains negatively signed and statistically significant. This finding suggests that NATO countries contribute only 5.7% of the foreign fighter battlefield deaths, *ceteris paribus*, that non-NATO countries contribute in support of Russia's offensive. This figure is very near the low end of the range discussed above. Moreover, the latter results are consistent with the findings reported in Mixon (2013).

The results for *Conscription* are generally mixed in terms of signs and for the most part are statistically insignificant. However, there is one specification involving *RDeaths* where *Conscription* is positively signed and statistically significant. This estimation suggests that there are 78.4% more foreign fighter deaths in support of Russia's invasion of Ukraine from countries that maintain military conscription than there are from countries that maintain volunteer armies, *ceteris paribus*. There are two other specifications involving *RDeaths* shown in Table 2, where *Conscription* is only marginally insignificant. In these cases, the parameter estimates suggest that there are 28.3 or 58.7% more foreign fighter deaths in support of Russia's invasion of Ukraine from countries that maintain military conscription than there are from countries that maintain volunteer armies, *ceteris paribus*. If taken together, the results suggest that the positive impact of *Conscription* on *RDeaths* ranges from 28.3 to 78.4%.

Next, the results in Table 2 indicate that foreign fighter deaths in support of Ukraine tend to emanate more from countries with relatively large standing armies, while those in support of Russia tend to emanate from countries with smaller standing armies. The results in Table 2 pertaining to financial support for Ukraine's defence against Russia are mixed, with the negatively signed and significant parameter estimates in the *UDeaths* specifications being the result of multicollinearity. In version six on the left-hand side of the table, the positively signed and statistically significant coefficient attached to *MilitarySupport* suggests that countries contributing more financially to Ukraine's defence are also home to more foreign fighter battlefield deaths in defence of Ukraine. According to the estimate, each additional €1 billion in military aid sent to Ukraine is associated with about 5.5% more battlefield deaths from that country, *ceteris paribus*. In the right-hand side specifications, *MilitarySupport* is negatively related to *RDeaths*, as expected, once the effect of multicollinearity is filtered out.

International trade effects

Maintenance of trade relations with Ukraine appears to be an important consideration in terms of foreign manpower support for Ukraine's military efforts. The results shown in Table 2 are consistent with Mixon (2013) in suggesting that countries with separate international trade agreements with Ukraine tend to contribute more battlefield deaths in support of Ukraine than do countries lacking such ties to Ukraine. At the same time, countries with separate international trade agreements with Russia tend to contribute only 5.3–17.6% of the foreign deaths in support of Ukraine that countries lacking such trade relations with Russia contribute in support of Ukraine. On the other hand, there is some evidence that foreign fighter deaths in support of Russia from those countries maintaining separate international trade agreements with Russia are greater than foreign fighter deaths in support of Russia from countries lacking such trade arrangements. These results align with those in Mixon (2013).

The results concerning the variable *RussianEnergy* are quite interesting. They indicate that the citizens of countries that are relatively large purchasers of Russian oil, gas, and/or coal tend to die in lower numbers supporting Ukraine's defence that do citizens of other countries. The estimates suggest that for every $1 billion that a country spends on Russian energy imports, that country experiences between 21.4 and 53.2% fewer foreign fighter deaths in support of Ukraine. As indicated on the right-hand side

[11]Based on the regression coefficient from this auxiliary regression, NATO countries contribute 27% *more* foreign fighter battlefield deaths, *ceteris paribus*, than do other countries in support of Ukraine's defense.

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Table 2. Poisson regression results

	Support for Ukraine models							Support for Russia models						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
constant	−5.563* (−7.53)	−5.652* (−7.63)	−6.850* (−9.66)	−6.971* (−10.10)	−0.247 (−1.11)	−0.004 (−0.00)	−4.025* (−7.86)	3.375* (3.92)	2.663* (3.48)	2.241* (2.93)	2.115* (2.96)	0.474 (1.28)	0.102 (0.88)	1.822* (2.75)
Demographic variables														
Distance	−0.000* (−4.52)	−0.000* (−4.57)	−0.000* (−3.49)	−0.000* (−3.64)	−0.000* (−5.09)	−0.000* (−4.64)	−0.000* (−5.15)	−0.000‡ (−2.35)	−0.000 (−0.30)	0.000 (0.14)	0.000 (0.28)	0.000 (0.10)	0.000 (0.10)	0.000 (0.49)
MedianInc	−0.000 (−1.53)							−0.000* (−5.50)						
Pop	0.001 (0.00)	−0.001 (−0.22)	−0.002 (−0.69)					0.020* (4.93)	0.014* (4.42)	0.013* (4.20)				
Military variables														
NATO	−0.747* (−3.55)	−0.766* (−3.67)	−0.155 (−0.79)	−0.174 (−0.89)	−0.617* (−3.06)	−0.730* (−3.72)	−0.954* (−5.95)	−2.369* (−3.53)	−3.004* (−4.33)	−2.206* (−3.83)	−2.593* (−4.64)	−1.681* (−3.13)	−1.528* (−2.87)	−2.253* (−4.69)
Conscription	−0.012 (−0.10)	0.046 (0.28)	0.209 (1.34)	0.241 (1.61)	0.078 (0.49)	0.206 (1.32)	0.245 (1.61)	0.186 (0.51)	0.579† (1.74)	0.462 (1.38)	−0.248 (−0.88)	0.249 (1.11)	−0.037 (−0.17)	−0.101 (−0.44)
MilitarySize	4.289* (5.09)	4.465* (5.23)	4.847* (5.95)	4.465* (7.53)	2.823* (5.39)		1.816* (9.57)	−15.89* (−3.77)	−16.35* (−4.55)	−15.56* (−4.23)	−5.391* (−2.60)	−4.441* (−2.89)		−5.535* (−2.94)
MilitarySupport	−0.090* (−4.08)	−0.097* (−4.50)	−0.096* (−4.71)	−0.095* (−4.74)	−0.037‡ (−2.05)	0.054* (8.31)		0.327‡ (1.97)	0.234 (0.51)	0.329‡ (2.03)	0.098 (0.71)	0.063 (0.45)	−0.089 (−0.65)	
International trade variables														
OECD	1.800* (5.92)	1.723* (6.37)						4.266* (5.87)	1.660‡ (2.52)					
TradeAgreementU	1.774* (10.17)	1.786* (11.23)	1.533* (10.38)	1.544* (10.51)	2.016* (14.20)	1.906* (13.78)	1.764* (13.23)	4.463* (11.02)	4.311* (12.65)	4.268* (12.16)	4.409* (12.55)	3.384* (13.32)	3.539* (13.92)	4.280* (13.44)
TradeAgreementR	−2.658‡ (−2.53)	−2.717* (−2.60)	−2.937* (−2.83)	−2.862* (−2.77)	−2.183‡ (−2.14)	−1.476 (−1.47)	−1.735† (−1.72)	2.321‡ (2.12)	2.725* (3.23)	2.482* (2.88)	1.548 (1.48)	1.116 (1.15)	−0.238 (−0.26)	1.645 (1.60)
RussianEnergy	−0.685* (−3.71)	−0.760* (−4.15)	−0.654* (−3.93)	−0.615* (−4.10)	−0.336* (−3.75)	−0.098 (−1.30)	−0.241‡ (−2.55)	0.184 (0.92)	0.431* (2.70)	0.445‡ (2.54)	0.368‡ (2.54)	0.278* (2.79)	0.013 (0.30)	0.369* (2.83)
Institutional variables														
EconFreedomIndex	0.132* (9.44)	0.132* (9.37)	0.146* (10.76)	0.147* (11.07)			0.077* (10.39)	−0.070* (−4.06)	−0.063* (−4.01)	−0.057* (−3.72)	−0.065* (−4.44)			−0.054* (−5.68)
DemocracyIndex	−0.455* (−6.88)	−0.492* (−7.97)	−0.347* (−6.33)	−0.348* (−6.35)	0.171* (5.33)	0.156* (4.99)		0.104 (1.02)	−0.059 (−0.64)	−0.032 (−0.35)	0.090 (1.03)	−0.274* (−5.31)	−0.244* (−4.82)	
nobs	114	123	123	123	128	129	124	114	123	123	123	127	129	124
Log likelihood	342.4	333.7	310.7	310.4	232.4	219.9	282.3	340.4	310.9	307.9	299.6	276.9	272.4	298.6
R_a^2	0.593	0.580	0.544	0.543	0.420	0.401	0.498	0.730	0.685	0.680	0.667	0.615	0.608	0.665

Notes: The numbers in parentheses above are *t*-values. *(‡)[†] denotes the 0.01(0.05)[0.10] level of significance.

of Table 3, that same country experiences between 32.0 and 56.0% more foreign fighter deaths in support of Russia's invasion with every additional $1 billion of Russian energy imported.

Economic and political institution effects

Lastly, the results for institutions related to economic freedom suggest that economically freer countries are associated with more foreign fighter battlefield deaths in support of Ukraine, and fewer foreign fighter battlefield deaths in support of Russia, than are their less economically free counterparts, *ceteris paribus*. For example, a one-unit increase in a country's economic freedom index is associated with between 8 and 15.8% *more* foreign fighter deaths in support of Ukraine, and between 5.3 and 6.8% *fewer* foreign fighter battlefield deaths in support of Russia. After testing multiple specifications to examine the impact of multicollinearity, which is expected to be present given aforementioned research by Leeson and Dean (2009) and Leeson *et al.* (2012) on the joint development of a country's economic and political institutions, it appears that the results pertaining to democratic government also provide evidence in support of our expectations. These results indicate more democratic countries are associated with more foreign fighter battlefield deaths in support of Ukraine, and fewer foreign fighter battlefield deaths in support of Russia, than are their more authoritarian counterparts, *ceteris paribus*. In this case, a one-unit increase in a country's democracy index is associated with between 16.9 and 18.6% more foreign fighter battlefield deaths in support of Ukraine, and between 21.7 and 24% fewer foreign fighter battlefield deaths in support of Russia.

Negative binomial estimates

To explore the impact of overdispersion in the data examined in this study, we also estimated the unrestricted version of each model presented in Table 2 using negative binominal regression estimation. These results, which are presented in Table 3, generally support their counterparts in Table 2. For example, OECD membership is positively associated with foreign fighter deaths, *ceteris paribus*, regardless of which combatant country is being supported. As with those in Table 2, the results shown in Table 3 are consistent with Mixon (2013) in suggesting that countries with separate international trade agreements with Ukraine tend to contribute more battlefield deaths in support of Ukraine than do countries lacking such ties to Ukraine. Lastly, the economic freedom (or lack thereof) enjoyed by a country has an influence on whether it has contributed to the foreign fighter death toll in the Russo-Ukrainian War. Based on the results in Table 3, a one-unit increase in a country's economic freedom index is associated with 9.5% *more* foreign fighter deaths in support of Ukraine, and 13.7% *fewer* foreign fighter battlefield deaths in support of Russia. Moreover, when specification (6) on both the right-hand and left-hand sides of Table 2 is tested using negative binomial regression, *DemocracyIndex* retains a positively signed and statistically significant parameter estimate in explaining *UDeaths* and a negatively signed parameter estimate in explaining *RDeaths*. The results suggest that a one-unit increase in a country's democracy index is associated with 64.8% more foreign fighter battlefield deaths in support of Ukraine, and 15.9% fewer foreign fighter battlefield deaths in support of Russia.

Moreover, a few of the results presented in Table 3 differ from their Table 2 counterparts. For instance, distance from the battlefields is a significant determinant of *only* the number of foreign fighter deaths in support of Russia. The Poisson regression indicated a significantly negative relationship between distance and foreign fighter deaths regardless of which combatant country is being supported. Also, NATO membership is positively associated with *UDeaths* and negatively (and statistically significantly) associated with *RDeaths*. These results are more in line with expectations than are their counterparts from the Poisson regression. Next, the presence of conscription in a country is associated with 86.4% fewer foreign fighter deaths in support of Russia from that country than is expected from a country that does not maintain conscription. Lastly, the binomial regression results reported in Table 3 indicate that maintenance of separate international trade agreements with Russia does not appear to influence either *UDeaths* or *RDeaths*.

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Table 3. Negative binomial regression results

	Support for Ukraine	Support for Russia
constant	−6.443* (−3.09)	8.397‡ (2.02)
Demographic variables		
Distance	−0.000 (−0.00)	−0.000‡ (−2.45)
MedianInc	0.000 (0.92)	−0.000* (−2.71)
Pop	0.011 (1.45)	−0.006 (−0.46)
Military variables		
NATO	0.200 (0.26)	−2.869† (−1.78)
Conscription	0.257 (0.35)	−1.994† (−1.66)
MilitarySize	2.711 (0.93)	0.843 (0.14)
MilitarySupport	−0.169† (−1.69)	0.040 (0.10)
International trade variables		
OECD	1.371† (1.79)	7.267* (2.73)
TradeAgreementU	3.147* (3.69)	3.995* (3.52)
TradeAgreementR	−0.533 (−0.32)	0.533 (0.24)
RussianEnergy	−0.521 (−1.31)	−0.393 (−0.66)
Institutional variables		
EconFreedomIndex	0.091‡ (1.98)	−0.147† (−1.85)
DemocracyIndex	−0.176 (−0.72)	0.556 (1.50)
nobs	114	114
Log likelihood	502.4	458.5
R_d^2	0.093	0.133

Notes: The numbers in parentheses above are *t*-values. *(‡)[†] denotes the 0.01(0.05)[0.10] level of significance.

Conclusions

This research undertaking has sought, using the most recent available data, to investigate the allocation of deaths among foreign fighters in the Russo-Ukrainian War since the 24 February 2022 Russian invasion of Ukraine. In doing so, this study most closely follows parallels Mixon's (2013) international public choice approach to the allocation of deaths among the minor allies of the United States in the recent Afghanistan War. As in Mixon's (2013) analysis, this study explores the role played by demographic factors, military institutions, and international trade relations in determining the number of foreign fighters from various countries who have died in support of either Ukraine or Russia during the Russo-Ukrainian War. Unlike Mixon (2013) and other related studies, however, this study also examines and finds empirical support for the importance of economic freedom and democracy in shaping the choices made by individuals around the globe to venture to, and risk dying, fighting on the battlefields of Ukraine.

There are multiple avenues for future research of this subject. First and foremost, as this war drags on, newer investigations of the sort provided here should provide important insights into the determinants of foreign fighter flows related to this particular conflict. Perhaps another fruitful avenue for future research pertains to an investigation of spatial autocorrelation relating to the institutional variables (e.g. economic freedom and democracy) along the lines of Leeson and Dean (2009) and Leeson *et al.* (2012), particularly if a dataset can be constructed that provides foreign fighter deaths per year. Lastly, an understanding of the motivations of foreign fighters to participate in the war may be gained

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through analysis of the biographical information about the individual fighters who have participated and died in the conflict. Although there have been several hundred foreign fighter deaths thus far in the Russo-Ukranian War, a biographical analysis in this case may be more manageable than in other major military conflicts.

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Appendix

Table A1. Countries included in the empirical analyses

Afghanistan	China	Indonesia	Montenegro	Slovenia
Albania	Columbia	Iran	Morocco	South Africa
Algeria	Costa Rica	Iraq	Mozambique	South Korea
Angola	Croatia	Ireland	Namibia	South Sudan
Argentina	Cuba	Israel	Nepal	Spain
Armenia	Cyprus	Italy	The Netherlands	Sri Lanka
Australia	Czech Republic	Ivory Coast	New Zealand	Sudan
Austria	Denmark	Japan	Nicaragua	Sweden
Azerbaijan	Ecuador	Jordan	Niger	Syria
Bangladesh	Egypt	Kazakhstan	Nigeria	Taiwan
Belarus	El Salvador	Kenya	Norway	Tajikistan
Belgium	Estonia	Kuwait	Oman	Tanzania
Belize	Ethiopia	Kyrgyzstan	Pakistan	Thailand
Bhutan	Finland	Laos	Panama	Tunisia
Bolivia	France	Latvia	Paraguay	Turkey
Bosnia and Herzegovina	Gambia	Lebanon	Peru	Turkmenistan
Botswana	Georgia	Liberia	Philippines	Uganda
Brazil	Germany	Lithuania	Poland	United Arab Emirates
Bulgaria	Ghana	Malawi	Portugal	United Kingdom
Burundi	Greece	Malaysia	Republic of Congo	United States
Cambodia	Guatemala	Mali	Romania	Uruguay
Cameroon	Guyana	Mauritania	Saudia Arabia	Uzbekistan
Canada	Honduras	Mauritius	Senegal	Venezuela
Central African Republic	Hungary	Mexico	Serbia	Vietnam
Chad	Iceland	Moldova	Sierra Leone	Yemen
Chile	India	Mongolia	Slovakia	Zambia
				Zimbabwe

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Table A2. Foreign fighter deaths by country of origin

Country	Deaths in support of Ukraine	Deaths in support of Russia	Country	Deaths in support of Ukraine	Deaths in support of Russia
Afghanistan	1		Kazakhstan	2	2
Argentina	1		Kyrgyzstan		26
Armenia		1	Latvia	1	
Australia	6		Lebanon	2	
Austria	1		Lithuania	1	1
Azerbaijan	35	1	Moldova	2	28
Belarus	38	1	Nepal		14
Belgium	1		The Netherlands	1	
Brazil	6		New Zealand	2	
Bulgaria	1		Norway	2	
Canada	8		Peru	5	
China		1	Poland	11	
Colombia	25	1	Portugal	1	
Costa Rica	1		Romania	1	
Croatia	2		Serbia	1	1
Czech Republic	4		Slovakia		1
Denmark	2		South Korea	5	
Estonia	2	1	Spain	3	
Finland	2	1	Sweden	7	
France	8		Syria		9
Georgia	58		Taiwan	1	
Germany	4		Tajikistan	1	60
Iraq		1	Tanzania		1
Ireland	4		Turkmenistan		1
Israel	6		United Kingdom	17	
Italy	1	2	United States	38	
Japan	1		Uzbekistan	1	61
			Zambia		1

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