



# Diversifying away the risk of war and cross-border political crisis



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## ABSTRACT

This paper investigates the behavior of crude oil prices, government bonds, and stock market indices around outbreaks of severe international crises and wars. Using a constant mean return event study, we show that these events are associated with positive and significant abnormal returns on oil and bonds, which means that these two asset classes can potentially shelter shareholders from plummeting equity values during international crises. A formal safe haven analysis confirms this insight. Such price movements may reflect a reallocation of funds across asset classes in response to the events, as well as shifts in the demand for oil due to precautionary, speculative, and military motives. We also calculate the weights for optimal portfolios, which could provide insurance against conflict risk.

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## 1. Introduction

The effects of wars and conflicts go beyond battlefields and inflict severe damage to human and physical capital with shattering economic consequences (Nordhaus, 2002; Cappelen et al., 1984; Deger and Smith, 1983). Consequently, one may expect the impact of such events to resonate in financial markets in general and stock markets in particular (Berkman et al., 2011). The financial integration of markets within a country or across national borders exacerbates the devastating effect of violent conflicts through a reduction in diversification benefits. As people flee warzones and seek safe shelter, so too does the financial capital. Thus, it becomes an imperative to search for safe haven assets during such political events, as the capital escapes tumbling equity markets. It is the potential presence of such assets and the associated diversification benefits that motivate our paper. More specifically, we consider crude oil and government bonds as potential safe havens for those investing in US and World equities. By “safe havens,” we mean assets with returns uncorrelated or negatively correlated with the stock market index returns around the time of conflict or political crisis outbreak. A “hedge” would be an asset that would exhibit such property

throughout the entire sample period, rather than during crises periods alone, while a “diversifier” is a non-hedge asset less than perfectly correlated with the stock market index on average (Baur and Lucey, 2010).

The strategic importance of petroleum in the global economic system (Hamilton, 1983), in addition to its current and historical association with wars and political conflicts (Liddell-Hart, 1953; Lieber, 1992; Yergin, 2012), suggests that it may be a possible safeguard against falling stock market valuations during such turbulent periods. Second, the theoretical, empirical, and anecdotal evidence documents flights from equities to the quality and liquidity of sovereign bonds during financial crises (Hartmann et al., 2004; Caballero and Krishnamurthy, 2008; Baur and Lucey, 2009). We therefore postulate that a positive market reaction may take place for sovereign bonds in times of political disarray. Sovereign debt is an important asset class, as it serves as a benchmark for corporate debt (Fabella and Madhur, 2003; Dittmar and Yuan, 2008), which tends to be less liquid (Hund and Lesmond, 2008). Furthermore, bonds issued by governments in international markets appear to lead other bonds in terms of price discovery (Dittmar and Yuan, 2008).

This paper documents substantial increases in price of crude oil during periods surrounding the outbreaks of wars and international crises. Several authors have observed oil price reactions in response to specific events, like the Gulf War (Lieber, 1992) and the war in Iraq (Leigh et al., 2003; Rigobon and Sack, 2005). Notwithstanding the importance of these two events, our investigation covers a more

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comprehensive sample of international conflicts, which allows us to derive general conclusions regarding the nexus between war and the market value of crude petroleum. We go on to argue that there may be several reasons why hostilities lead to oil price inflation. First, the demand from the military increases, as large quantities of fuel are required for the navy, aircrafts, and armored fighting vehicles. Second, the uncertainty surrounding future supply, and questions regarding the safety of transportation routes, can provoke market participants to engage in panic buying. Third, there may be rational stockpiling on the part of countries striving to preserve their sovereignty and maintain energy security in the face of political turmoil. Last but not least, cross-border conflicts increase the probability of oil embargoes and the use of oil as a tool of warfare. For instance, a number of Arab OPEC members imposed an embargo on oil exports to the US in retaliation for US help extended to Israel in the 1973 Arab–Israeli war (Smith, 2009). As a consequence, oil prices soared and this became known as the first oil crisis.

The paper further shows that sovereign bonds exhibit similar behavior to that of crude oil around eruptions of international conflicts. The fact that market prices are sensitive to political and military actions may have important implications for international investors seeking to diversify their portfolios effectively. The desperate diversification search and risk avoidance often turns into the flight-to-quality, a phenomenon defined as the movement of funds from equities to highly rated bonds in times of turmoil. The existence of this effect renders bonds an effective instrument for diversification, as pointed out by Baur and Lucey (2009). Furthermore, they show that diversification benefits arising from the flight-to-quality are shown to enhance the financial system's resilience and stability. Similarly, the systemic propagation of financial market crises between, and within, G5 countries is limited by the presence of the flight-to-quality phenomenon (Hartmann et al., 2004).

Importantly, the effectiveness of cross-border equity diversification is found to decline during periods of heightened uncertainty in stock markets, while the effectiveness of bonds in diversification is shown to increase during the same periods (Connolly et al., 2005). The growing integration between different equity markets has meant that a shock in one market is easily transmitted to another one (Asgharian and Nossman, 2011; Koutmos and Booth, 1995; Arshanapalli and Doukas, 1993). Thus, the search for an effective diversification tool in times of international political crises becomes an imperative in the light of evidence that suggests higher systemic risk in equity markets.

Interestingly, our results also attest to the fact that conflicts depress the values of stock market indices worldwide. This corroborates earlier findings reported in the literature (see, for example, Rigobon and Sack, 2005; Wisniewski, 2009; Berkman et al., 2011). The logical implication for stock market investors is that crude oil and sovereign bonds could be useful assets with which to diversify away the price risk associated with war and crisis outbreaks. To verify this idea, we present a formal test for the safe haven property. We adopt a definition of safe haven which is similar to that proposed by Baur and Lucey (2010). Our results confirm the predictions that, from the perspective of stockholders, crude oil and government bonds provide refuge from the risk of war and international crisis. Consequently, investors are advised to take advantage of the unique diversification benefits offered by these two assets. With regard to crude oil, taking delivery in the spot market and storing this commodity is, admittedly, not particularly convenient. However, a long position on futures contracts or an investment in crude oil exchange-traded funds (ETFs) can be used to achieve the same objective.<sup>3</sup>

The remainder of the paper is organized as follows. The next section reviews the related literature. Section 3 elaborates on the International Crisis Behavior (ICB) database as well as on the financial series used in

the study and their summary statistics. Section 4 describes our methodological approach. Results of event study analysis, safe haven tests, and optimal portfolio analysis are reported in Section 5. This is followed by a description of robustness checks performed and further considerations. The final section concludes the paper and considers practical implications for investors.

## 2. The effect of cross-border political crisis and war on different assets

### 2.1. Oil in times of warfare

Not only is crude oil an important investment asset, it has also been a consumer staple since time immemorial. In fact, the history of human civilization and the use of oil are closely intertwined. In the more distant past, kerosene distilled from oil was a popular illuminant used to prolong the productive part of the day for large swaths of the population. Widespread adoption of the internal combustion engine led to society becoming reliant on hydrocarbons to propel its automobiles, ships, and airplanes. Oil is used for energy production as well for heating, and its derivatives are inputs in the manufacturing of plastic, synthetic fibers, and rubbers, detergents, chemical fertilizers, and other petrochemicals. The distillation of crude oil gives a residue of asphalt, a substance utilized for paving roads. The global economy appears to be addicted to oil and consumes about 88 million barrels of it per day (BP, 2012). Perhaps unsurprisingly, academic research has found that oil price hikes and increased price volatility can have detrimental effects on the economies of countries that are net importers of oil (Gisser and Goodwin, 1986; Ferderer, 1996; Abeyasinghe, 2001). At the time of writing his seminal paper, Hamilton (1983) notes that since World War II all but one US recessions occurred following increases in the price of crude petroleum.

Oil may be as much of a curse as it is a blessing. The uneven geographical distribution of documented oil reserves has been a fertile breeding ground for political tension. History is littered with heated disputes over rent allocations and battles for control over oil fields. As natural resources increase the value of the state, they also create incentives for rebel groups to overthrow governments by instigating civil war (Fearon and Laitin, 2003; Collier and Hoeffler, 2004). In order to protect their oil wealth, petrostates tend to import large quantities of conventional weapons (Khanna and Chapman, 2010). Furthermore, according to Colgan (2011), access to oil can provide a source of finance to certain revolutionary governments with a predilection for foreign policy adventurism and military conflict.

Petroleum fuels the war machine—both literally and metaphorically. Availability of oil may determine outcomes on the battlefield and shape military strategies. In the pivotal Battle of Stalingrad, German tanks did not have enough fuel to break out from the siege (Yergin, 2012). The Axis powers also faced a shortage of fuel in Africa when the British sank their tankers. This substantially weakened the Afrika Korps under the command of Erwin Rommel that ultimately surrendered in May 1943 (Liddell-Hart, 1953). Soon thereafter, grappling with extreme oil scarcity forced Japan to resort to Kamikaze attacks. This tactic relied on Japanese suicide pilots crashing their planes filled with bombs into enemy ships, which meant they did not require aviation fuel for the return trip (Yergin, 2012). Clearly, oil becomes a commodity of strategic importance in times of international hostilities.

The role of oil in warfare has risen dramatically since World War II. The driving factors behind that rise are the increased mechanization of wartime technologies, and the long-distance mobility requirement generated by the expeditionary nature of conflicts (Deloitte, 2009). This is reflected in 22 gal of fuel consumption per U.S. soldier per day in the most recent conflicts in Iraq and Afghanistan, which represents a 175% increase from its level in the Vietnam conflict (ibid. 2009:3). Furthermore, fuel purchases by U.S. forces in Afghanistan have increased from 48 million gallons in 2003 to 489 million gallons in

<sup>3</sup> Smith (2009: 158) notes that the correlation between the West Texas Intermediate crude oil price and the nearest-dated futures price is 0.9999 when measured in levels, and 0.9357 when measured in daily price changes.

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