The Launch of the JPMCC's Geopolitical Oil Price Risk Index (GOPRX)

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Professor Yosef Bonaparte, Ph.D., the JPMCC Program Director and Associate Professor of Finance at the University of Colorado Denver Business School, provided an overview on the commodities center at the beginning of the JPMCC's 3rd Annual International Commodities Symposium on August 12, 2019.

Introduction

This digest article describes a new research project at the JPMCC: the launch of the Geopolitical Oil Price Risk Index (GOPRX), which is designed to reflect the impact of geopolitics on oil prices, volatility, and supply in one succinct metric.

Methodology

To construct our index, we utilize data from Google Trends to track attention to several terms related to politics, uncertainty, oil price, and supply. Several studies document that Google's search engine is the leading search tool; for example, NetMarketShare.com (2019) has documented that Google is used in 75.7% of searches among the different search engines on the web. As noted below, there is good academic support for using search activity as a proxy for the intensity of investment concerns.

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Studies by Vlastakis and Markellos (2012), Vozlyublennaia (2014) and Dimpfl and Jank (2016) suggest that Google searches function as a good proxy for retail investor news attentiveness. Other papers demonstrate that search intensity varies over time; for example, Dzielinski (2012) shows that investors intensify their search in response to greater uncertainty; and Vozlyublennaia (2014) shows that more stock-related Google searches are conducted when stock prices decline. The search intensity is also studied in economic psychology literature; for example, Lemieux and Peterson (2011) and Abbas *et al.* (2013) provide empirical evidence that in response to great price uncertainty, individuals increase their search activity.

Following these insights, we use Google Trends to track internet news search volume over time, using this as a proxy for investor news priorities. In particular, we use monthly data from Google Trends to obtain search volume for keyword phrases commonly associated with oil and politics. Having identified the most commonly used keyword phrases, we then use Google Trends as our proxy for GOPRX. Specifically, to have comprehensive information about GOPRX, we originally considered 27 different worldwide search terms to measure the relevant trends. These 27 search terms are divided into five groups and are reported in Table 1.

Table 1
Search Term Keywords by Group

Number	Group 1: Sanction	Number	Group 4: Economic Uncertainty & Geography
1	oil sanction	1	oil price uncertainty
2	Iraq sanction	2	oil uncertainty
3	Iran sanction	3	Strait of Hormuz oil
		4	Gulf of Aden oil
		5	Suez canal oil
Number	Group 2: Countries under Political Tensions	Number	Group 5: U.S. Presidents and Oil Policy
1	Saudi Arabia oil	1	Carter oil
2	Venezuela oil	2	Reagan oil
3	Libya oil	3	Clinton oil
4	Iraq oil	4	Bush oil
5	Russia oil	5	Obama oil
6	Syria oil	6	Trump oil
Number	Group 3: Political Events		
1	Middle Eastern war		
2	Israeli Arab conflict		
3	Gulf war		
4	Terrorism		
5	disruption oil		
6	Aramco oil		
7	OPEC		

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We employ a proprietary application of factor analysis to compose the monthly GOPRX from Table 1's data. We normalize the GOPRX, so it will be between 0 and 100, where 100 is the maximum geopolitical risk. Accordingly, we can then evaluate the JPMCC's GOPRX over time.

Results

We plot the GOPRX for the period, January 2004 through June 2019. For capturing the geopolitical oil impact, we find that the keyword phrases, "sanction", "Gulf war" and "Terrorism" are the most suitable ones. Thus far, the GOPRX's peak value was during the Iraq War in 2004 while a recent peak was after the election of President Trump in 2016.

Figure 1
The JPMCC's Geopolitical Oil Price Risk Index (GOPRX)
January 2004 through June 2019 (Monthly Data)
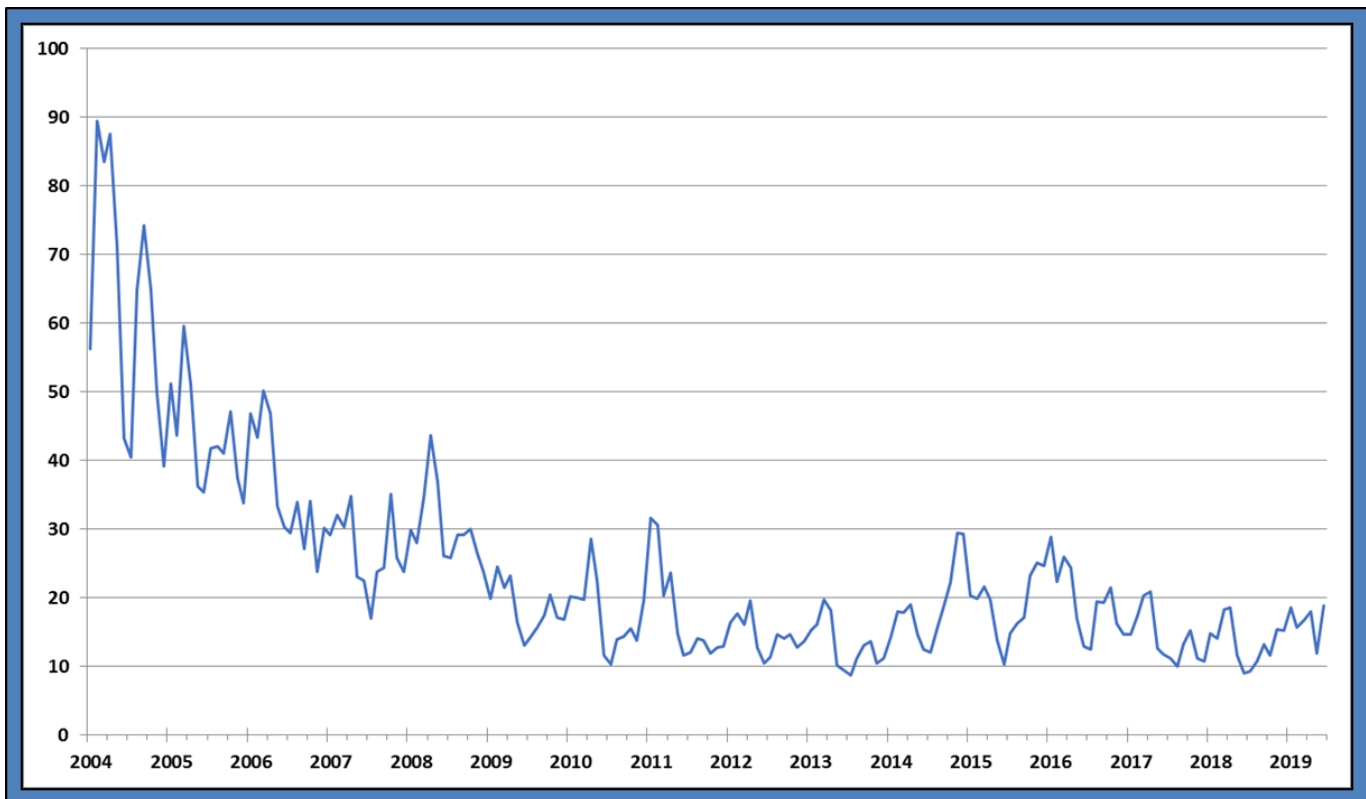
Furthermore, *we find that GOPRX is correlated with the OVX (Oil Volatility Index) and negatively correlated with global oil supply.* These findings suggest that the GOPRX can potentially be useful in monitoring the geopolitical influences on oil price volatility and oil supply.

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Endnotes

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