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Can economic policy uncertainty and investors sentiment predict commodities returns and volatility?

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ABSTRACT

The objective of this paper is to employ the novel technique of nonparametric causality-in-quantiles to examine the predictability of returns and volatility of six important commodities over the weekly period July 1996–June 2016. We use a news-based measure of economic uncertainty, bullish and bearish investor sentiments and identify the structural breaks in commodities returns through modified Iterated Cumulative Sum of Squares (ICSS) algorithm; breaks render inference based on linear models less reliable. The results of our nonparametric causality-in-quantiles tests show that investors' sentiments (both bullish and bearish) have a causal impact, over the entire conditional distribution all most at all quantiles in both global financial crisis (GFC) and full sample, on the mean and variance of commodities returns which is also more profound compared to economic policy uncertainty (EPU). The commodity investors may include the general sentiments prevailing in equity markets in their information set while making investment decisions.

1. Introduction

Predictability of commodities returns through measures of uncertainty and investors' sentiment is a relatively new area of financial econometric research. In recent years, massive growth in commodity investment has exacerbated coupling between economic factors and commodity prices which further enhanced the impact of economic factors on commodity returns (Reboredo and Uddin, 2016). The exposure to commodities investment mainly heightened during the commodities prices boom period during 2007–08, with net long positions in commodities futures by the investors (Pastor and Veronesi, 2012).

The investor sentiments and policy uncertainties that typically impact stock markets become important commodity return drivers. Therefore, these factors need to be closely monitored by investors and policy makers while making commodities investment decisions. It has been well established in existing literature that investor sentiment plays a vital role in financial markets. For instance, the theoretical prospective presented by De Long et al. (1990) shows that changes in noise traders and limits to arbitrage cause deviation in stock prices from their ultimate values which leads to excessive market volatility. The momentum profits arise only under investor optimism (Antoniou et al. 2013) and subsequent returns change relative to the investor sentiments (Baker and Wurgler, 2006). Empirically, the investors' sentiments have significant impact on and explanatory power for various asset's pricing (Sun et al. 2016). Moreover, the sentiments of speculators and hedgers are valuable timing indicators in commodity markets, where, the speculator's sentiment is seen as a price continuation indicator while the hedger's sentiment helps in forecasting the future price movements (Wang, 2001).

On the other hand, previous empirical literature has also examined the financialization of commodity markets and identified a number of potential drivers (including financial factors and macroeconomic conditions) that have impact on commodity returns. A strand of this, Henderson et al. (2015) tested the association between the flows of investments to commodity markets and commodity returns. Singleton (2013) also explored the relationship between economic conditions and commodity returns and find a significant impact on commodity returns. Few other studies investigated the impact of speculation and index-based investment on commodity prices and find that these

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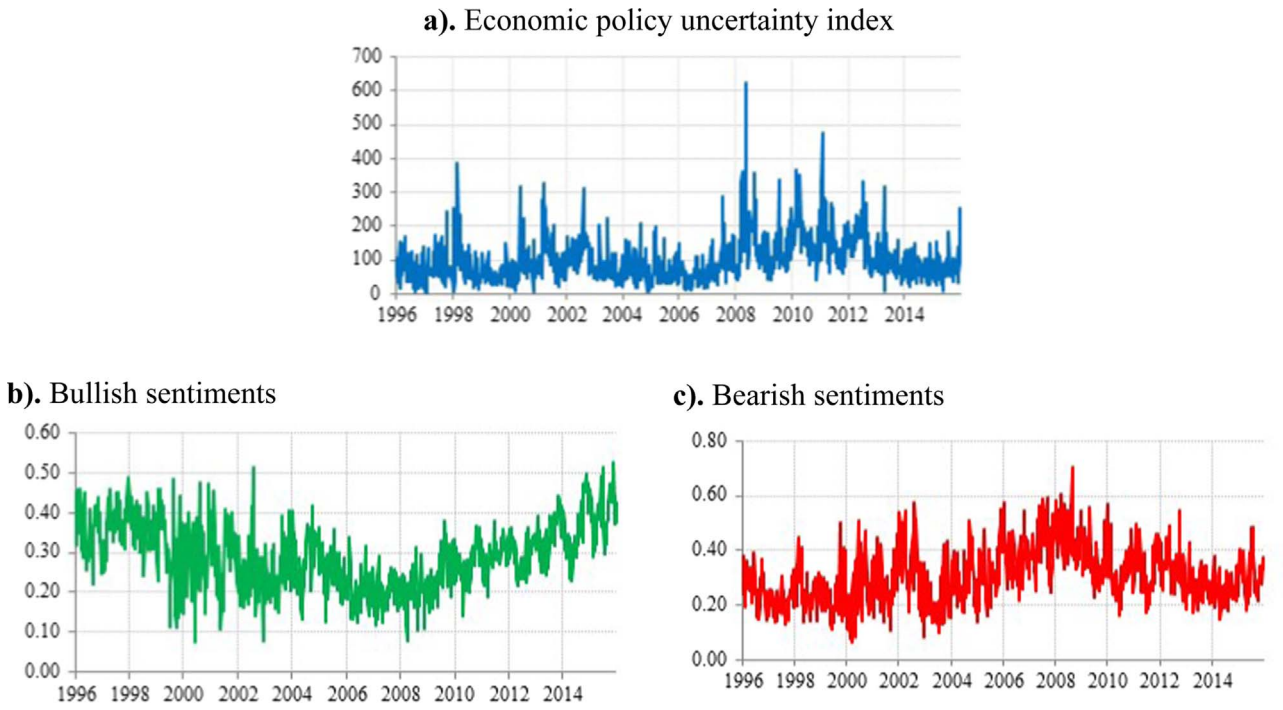

Fig. 1. Time trend of EPU, bullish and bearish investor sentiments.

Table 1
Stochastic properties and correlations.

	Gold	Oil	Palladium	Platinum	Silver	Titanium	EPU	Bullish	Bearish
Mean	0.1193	0.0735	0.1363	0.0881	0.1203	0.0025	100.59	0.2931	0.3066
Maximum	14.1241	26.1540	28.1851	17.5607	18.9242	10.7032	623.45	0.5286	0.7027
Minimum	-14.4990	-36.7875	-28.4600	-15.7062	-28.1210	-19.4102	5.80	0.0769	0.0667
Std. Dev.	2.4522	5.4796	5.0640	3.1814	4.1230	1.8421	65.05	0.0820	0.1000
Skewness	-0.0072	-0.4798	-0.0570	-0.3405	-0.6699	-0.6970	1.86	0.1753	0.5235
Kurtosis	6.8579	7.9577	7.2231	6.0028	7.3382	18.3397	9.49	2.5362	2.9864
J-B	646.82***	1108.1***	775.62***	412.02***	895.88***	10310.5***	2434.9***	14.686***	47.643***
Q(12)	24.3963**	40.392***	14.603	19.032**	18.976**	10.095	1890.9***	4054.1***	2797.4***
Q^2(12)	169.422***	351.50***	150.52***	256.75***	130.02***	46.866***	870.82***	4007.8***	2638.9***
ARCH(12)	213.62***	180.68***	164.18***	137.06***	235.07***	262.12***	205.41***	148.34***	121.09***
ADF	-33.109***	-35.209***	-31.485***	-32.184***	-31.903***	-33.735***	-5.5106***	-5.4127***	-5.5971***
PP	-33.540***	-35.213***	-31.484***	-32.188***	-32.024***	-33.704***	-25.581***	-15.825***	-16.280***
KPSS	0.3136	0.1386	0.1124	0.2085	0.1184	0.2677	0.8246	0.861	0.1951
Correlations									
EPU	0.0381	-0.0380	-0.0791**	-0.0645**	-0.0147	-0.0138	–	–	–
	(1.2292)	(-1.2258)	(-2.5604)	(-2.0864)	(-0.4745)	(-0.4466)			
Bullish	-0.0274	0.0178	-0.0021	-0.0130	-0.0023	-0.0251	–	–	–
	(-0.8855)	(0.5746)	(-0.0672)	(-0.4198)	(-0.0732)	(-0.8094)			
Bearish	0.0120	-0.0435	-0.1428***	-0.1082***	-0.0778**	0.0204	–	–	–
	(0.3864)	(-1.4054)	(-4.6537)	(-3.5130)	(-2.5182)	(0.6572)			

Note: This table reports the descriptive statistics for commodities returns, EPU and investors sentiments. The sample period covers July 8, 1996–June 27, 2016 with the weekly frequency, totaling 1043 observations for each series. In addition to the mean, the standard deviation, minimum, maximum, skewness, and kurtosis statistics, the table reports the Jarque-Bera normality test (JB), the Ljung-Box [Q(12)] autocorrelation tests, and the ARCH(12) of the Lagrange multiplier (LM) tests for the autoregressive conditional heteroskedasticity (ARCH) upto 12 lags. The asterisks ***, ** and * represent significance at the 1%, 5%, and 10% levels, respectively. The t statistics for the correlation tests are in parenthesis.

factors are important to predict the future commodity price movements (see for example, Büyükşahin and Robe (2014), Gilbert (2010), Hamilton and Wu (2015), Irwin and Sanders (2011) and Tang and Xiong (2012).

Yet another strand of existing literature has explored the impact of economic policy uncertainty (EPU) on commodity and stock returns. The early theoretical work of Keynes (1930) and Working (1949) documented that the term structure, hedging pressure and risk factors are the key driver attributes of commodity returns. More recently, Wang et al., (2015) and Reboredo and Wen (2015) evident a predictable relationship between economic policy uncertainty and commodity returns. However, Yin and Han (2014) depicted a time-varying relationship between EPU and commodity returns and found that the macroeconomic factors which reflect policy uncertainty can predict the volatility in commodity market. Moreover, financial market uncertainty and stress is also an important factor to determine the commodity returns. The investors view commodities as a hedge and safe haven for their stock portfolios and thus both researchers and investors have shown renewed interest in the commodity markets to understanding the commodities return variations during bullish and bearish markets (Bianchi et al. 2015, Narayan et al. 2015).

In sum, both the prior empirical researches and economic theory suggest that EPU and investor sentiments have substantial effect on