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The impact of speculation on precious metals futures markets

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ABSTRACT

Existing research finds little evidence that speculative activity in futures markets has any impact on precious metals' spot prices. We examine whether speculators' positions predict returns and return volatility in precious metals futures markets. We use two proxies for speculative activity: non-commercial traders and money managers. Money managers are a subcategory of non-commercial traders that is associated with professional speculators. Our analysis distinguishes between short- and long-term dynamics. Whereas we cannot confirm any short-term impact of speculators on returns and conditional volatility in the period after 2006, the weekly changes in non-commercial traders' positions appear to have a destabilizing impact on subsequent conditional volatility in gold, silver, and palladium futures markets in the period prior to June 2006. Moreover, we cannot rule out a long-term, potentially destabilizing, impact on returns when accumulated positions of speculators over monthly horizons are considered.

Introduction

Traditionally, speculation has been associated with a number of desirable properties: Rational arbitrageurs recognize market inefficiencies, alleviate noise-driven price movements and restore prices back to their fundamental values (De Long et al., 1990). However, recent developments in commodity markets such as price bubbles in energy and agricultural markets cast a shadow on the participation of speculators in futures markets, and allegations have been put forward that speculators may purposely destabilize market prices leading to persistent and significant bubbles (e.g. Tokic, 2012). The fact that the US Commodity Futures Trading Commission (CFTC) is currently discussing the proposal to establish position limits for 28 referenced contracts, including the four precious metals: COMEX gold, COMEX silver, NYMEX platinum, and NYMEX palladium indicates that concerns about the impact of speculators on commodity prices exist not only with respect to agricultural and energy markets, but also in precious metals markets (CFTC, 2013). Exploring the impact of speculative activity in precious metals markets is all the more important given their strong industrial profile (platinum and palladium) and their status as financial assets and safe havens that offer protection against inflation and financial instability risks (gold and silver). Moreover, recent evidence on the volatility shift contagion in precious metals markets suggests that price distortions in one market might easily spillover to other precious metals markets leading to further price distortions (Sensoy, 2013). Fig. 1 shows that futures prices in precious metals markets experienced considerable turbulences during the 2007–2008 and 2010–2012 periods.

Whereas the speculative activity in energy and agricultural markets attracts the considerable attention of the empirical and theoretical research, there are only a few studies on the impact of speculation on precious metals markets (e.g. Mutafoglu et al., 2012; Fassas, 2012). Fassas (2012) detects a positive contemporaneous relationship between precious metals' spot returns and in- and outflows in the precious metals ETPs. By contrast, Fassas (2012) and Mutafoglu et al. (2012) find only limited evidence of a Granger-causal relationship between precious metals spot returns and ETPs' holdings of precious metals/positions of non-commercial traders in futures markets. However, relating speculative activity in futures markets to returns in spot markets is not straightforward (Brunetti and Buyuksahin, 2009). If there is any impact of positions of traders in futures markets on prices, it is most likely to manifest itself with respect to the futures, not the spot prices. Futures prices deviate from spot prices as a consequence of risk premia earned or paid when trading in futures markets, and the futures risk premia are known to be affected by the hedgers' positions (De Roon et al., 2000).

We make several contributions to the existing literature. First, whereas existing studies examine the relationship between speculative activity and precious metals spot returns (Mutafoglu et al., 2012; Fassas, 2012), to our knowledge, we are the first to focus on the impact of speculation on returns and conditional return volatility in precious metals futures markets. Second, while Mutafoglu et al. (2012) deal only with non-commercial traders' positions and Fassas

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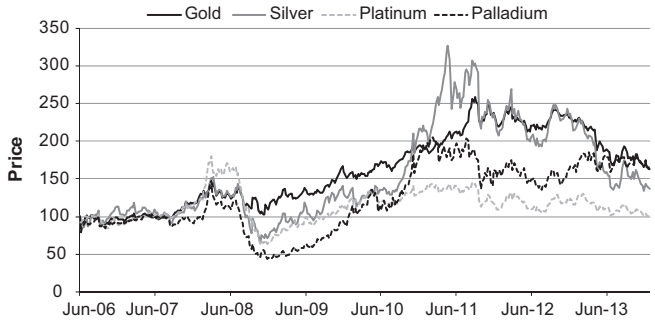

Fig. 1. Futures price indices, *Note*: this figure shows the futures price indices for gold, silver, platinum, and palladium. The rollover procedure is based on switching to a second-nearby contract when the open interest of the second-nearby contract is higher than the open interest of the first-nearby contract. Based on weekly returns R_t obtained from the rollover, we construct a price index: $P_t = (1+R_t)*P_{t-1}$. The index starts with $P_0 = 100$ on June 6, 2006.

(2012) focuses on the ETPs' invested amounts in precious metals, we examine not only the impact of non-commercial traders, but also use another proxy for the speculative activity: the money managers. Non-commercial traders encompass all traders whose activity is not related to hedging a physical commodity exposure. The advantage of using non-commercial traders as a proxy for speculators is the data availability over a longer period of time. Money managers constitute a subgroup of non-commercial traders and can be perceived as professional speculators. Analyzing the price impact of professional speculators may bring additional insight compared to a more general category of non-commercial traders. However, data on positions of money managers are only available since June 2006.

Our analysis distinguishes between short- and long-term dynamics. Furthermore, we introduce proxies for macroeconomic and financial market development in the standard Granger causality approach in order to ensure that our results are not contaminated by the omitted variable bias. In addition, following De Roon et al. (2000) who argue that futures returns are determined by hedging pressure, we explicitly account for the impact of hedging pressure both on futures returns and on positions of speculators.

The paper is structured as follows. Section 2 summarizes the existing literature. Sections 3 and 4 describe data and methodology. Section 5 presents estimation results. Section 6 concludes.

Related literature

Precious metals spot and futures markets have attracted considerable attention of empirical and theoretical research. One strand of the literature focuses on the volatility spillover effects in precious metals spot markets (Hammoudeh et al., 2010; Morales and Andreosso-O'Callaghan, 2011; Cochran et al., 2012). The most recent study of Sensoy (2013) examines the volatility shift contagion effects in the four precious metals spot markets during the 1993–2013 period. The contagion effects are especially pronounced for gold and silver spot markets, whereas they are negligible in platinum and palladium spot markets (Sensoy, 2013). Batten et al. (2010) focus on macroeconomic determinants of monthly spot price volatilities of precious metals. They find that monetary factors such as inflation, interest rate, and money supply growth rate influence return volatilities in gold, palladium, and platinum spot markets. Financial variables such as the S&P 500 and World ex S&P 500 indices significantly impact return volatilities of platinum and palladium. Silver return volatilities are found to be related to neither monetary nor financial factors (Batten et al., 2010).

Another strand of the literature analyzes information flows between precious metals futures markets. Xu and Fung (2005) find evidence of significant inter-market information flows between the US and Japanese gold, platinum, and silver futures markets. Aruga and Managi (2011) identify a long-run relationship and substantial information flows between the US and Japanese platinum and palladium futures markets. Analyzing the validity of the Law of One Price, they argue that only the palladium futures market can be considered as an integrated international market. Aruga and Managi (2011) confirm the leading role of the US market in the transmission of information between US and Japanese futures markets.

The literature dealing with speculation in precious metals markets is rather scarce, and, to our knowledge, existing studies on speculative activity in precious metals markets focus on spot prices. Fassas (2012) examines 28 ETPs that have a physical exposure to gold, silver, platinum, and palladium. The analysis is based on the weekly data from May 2007 to February 2011. Fassas (2012) does not find any evidence that the weekly percentage changes in the metal holdings of the ETPs Granger-cause spot returns of the underlying precious metal. However, a positive contemporaneous relationship between in- and outflows into precious metals ETPs and precious metals spot returns cannot be ruled out (Fassas, 2012). With respect to the ETPs, Ivanov (2013) identifies an increasing importance of gold and silver ETFs in the price discovery process.

The paper closest to our study is that of Mutafoglu et al. (2012) who conduct an extensive analysis of the impact of commercial, non-commercial and non-reporting traders on gold, silver, and platinum spot returns during a period from January 1993 to December 2009. Mutafoglu et al. (2012) rely on the Granger causality framework and examine the causalities from past traders' positions to subsequent spot returns and vice versa. In addition, they identify structural breaks around 2000. In the post-break period, there is evidence of trend following behavior of non-commercial traders and negative feedback trading of commercial traders. Although Granger-causal effects of positions of commercial and non-commercial traders on silver spot returns are present in the pre-break period, there is no evidence of a leading role of trader positions for market returns during the post-break period in any precious metals market. Only the position changes of non-reporting traders lead gold spot returns during the post-break period. Moreover, following Sanders et al. (2004) and Wang (2001), Mutafoglu et al. (2012) conduct extreme level regressions in order to account for the fact that only extremely bullish or bearish trader sentiments may impact prices. Although there is some evidence that extreme positions of commercial and non-reporting traders may have affected spot returns, no significant impact of extreme positions of non-commercial traders on spot returns is found for any precious metal (Mutafoglu et al., 2012).

We complement the existing research on speculation in precious metals markets in several ways. We examine whether the findings - of Mutafoglu et al. (2012) for spot markets equally apply to futures markets. We rely on a comprehensive VAR model that is robust to heteroskedasticity and autocorrelation. Furthermore, following Grosche (2014) who emphasizes the importance of including control variables to avoid the omitted variable bias of the standard Granger causality approach, we include a set of control variables that are supposed to capture macroeconomic and financial factors. De Roon et al. (2000) argue that futures returns are determined by the covariance of the futures return with the market return, by the hedging pressure in the futures market, and cross-market hedging pressures. We explicitly account for the impact of the hedging pressure both on futures returns and on positions of speculators. The analysis focuses not only on non-commercial traders, but also on money managers who represent professional speculators. In addition, we explore the long-run predictability of futures returns via speculators' positions. Finally, we examine the impact of speculators (money managers and non-commercial traders) on conditional futures return volatilities and, thus, contribute to the extensive research on the determinants of price volatility in precious metals futures markets.