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Financialization in commodity markets: A passing trend or the new normal?

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ABSTRACT

In this paper, we show that large inflows into commodity investments, a recent phenomenon known as financialization, has changed the behavior and dependence structure between commodities and the general stock market. The common perception is that the increase in comovements is the result of distressed investors selling both assets during the 2007–2009 financial crisis. We show that financial distress alone cannot explain the size and persistence of comovements. Instead, we argue that commodities have become an investment style for institutional investors. Given that institutional investors continue to target funds into commodities, we predict spillovers between commodities and the stock market to remain high in the future.

1. Introduction

The past decade witnessed a fundamental change in the composition of commodity futures market participants. Traditionally, the market was dominated by specialized investors who would earn a risk premium by providing insurance to short hedging commodity producers and long hedging commodity processors (Keynes, 1930; Hicks, 1939; Hirshleifer, 1988). Starting in the early 2000s, however, flows into commodity investments began to grow at an unprecedented rate and are reported to have increased from $ 15 billion in 2003 to $ 250 billion in 2009 (Irwin and Sanders, 2011). These vast inflows are mainly attributable to institutional investors that have historically never been engaged in commodity investments of such a large scale (Domanski and Heath, 2007). Conservative estimates show that from 2000 to 2010 the number of commodity index traders, i.e. long-only investors such as pension funds and insurance companies, more than quadrupled and the number of hedge funds more than tripled. In contrast, during the same time period, the amount of traders engaged in futures markets to hedge commodity price risk less than doubled (Cheng et al., 2014).

Investment incentives of these new types of investors differ from those of traditional investors. For instance, commodity index traders intensify their investment in commodities to improve portfolio diversification (Norrish, 2010) while trading decisions of hedge funds are driven by past increases in spot prices and high roll returns (Domanski and Heath, 2007). The appearance of these new types of investors had therefore important consequences for the behavior of commodities in financial markets, and the way commodities are linked to other assets. For instance, Tang and Xiong (2012) argue that these vast inflows led to a process of integration of commodity futures markets with other financial markets in which portfolio rebalancing of index investors can cause volatility spillovers from outside to commodity markets. This process, commonly referred to as the financialization of commodity markets, has been observed with concern among policy makers who made commodity index traders responsible for the unwarranted

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increase in energy and food prices.[2] The shift in the behavior of commodities has also sparked the interest of the academic literature and marks an important change from the traditional description of commodities as an asset class that reliably delivers returns with low correlation to the stock market (Bessembinder, 1992; Bessembinder and Chan, 1992; Gorton and Rouwenhorst, 2006).[3]

Previous studies note that the behavior of commodities appears to have changed somewhere between 2004 and the 2007–2009 financial crisis (Tang and Xiong, 2012; Daskalaki and Skiadopoulos, 2011). We will be more specific and use a statistical framework to determine the exact date associated with a fundamental change in the relation between commodities and stocks. While Tang and Xiong (2012) report that significant investments from commodity index traders began already in 2004, we will show that the impact of these investments did not materialize before September 2008. Identifying the break in the correlation structure will prove useful when we explore changes in commodity behavior. As a measure for this relation we use the returns correlation. However, we do not follow the existing literature to identify changes in correlation by means of a parametric model with time-varying correlations, i.e. a multivariate GARCH (Engle et al., 1984). When it comes to the implementation of these models, the researcher is confronted with a multitude of competing MGARCH specifications, each of them implying a different pattern of correlation dynamics (Kroner and Ng, 1998; Bauwens et al., 2006). As a consequence, the results from these models can be highly misleading (Füss et al., 2012). For this reason, we identify a change in correlation using a simple yet efficient algorithm for correlation change-point inference (Galeano and Wied, 2014). We thereby circumvent a possibly misspecified parametric model.

Identification of a structural change in the correlations between commodities and the stock market allows us to split the sample into a pre- and a post-financialization period. We quantify the impact of the structural change by estimating the transmission of a shock in the stock market to the commodity market during both periods. We thereby apply an empirical approach based on risk spillovers (Adams et al., 2014). In contrast to correlations, this approach allows us to measure the direction of the impact and, given the model is properly specified, provides a causal interpretation of the spillovers.[4]

We show that risk spillovers from stocks to commodities were nonexistent before 2008 but have increased significantly since then. It would seem reasonable to explain the sudden appearance of risk spillovers by the inception of the financial crisis, which had its full scale impact on markets following the weeks after the Lehman default (Bartram and Bodnar, 2009): in the months following the Lehman collapse in September 2008, the prices of most tradable assets experienced simultaneous sharp declines within the same days. A prominent model for the explanation of this phenomenon is the Brunnermeier and Pedersen (2009) liquidity and loss spiral which has been adopted by many studies investigating comovements and spillovers among asset classes and financial institutions (see, e.g., Adrian and Brunnermeier, 2011; Acharya et al., 2010; Shleifer and Vishny, 2011, and the reference therein). Cheng et al. (2014) show that the liquidity and loss spiral is also relevant for commodity markets: in an effort to raise liquidity, distressed financial investors were forced to unwind their long commodity positions, thereby causing a shortfall for short-hedging commodity producers. The simultaneous disposition of commodities and stocks thereby generated a pronounced spike in their correlation structure. Indeed, our empirical results show that risk spillovers from stocks to commodities reach their peak during the market distress period of 2008. However, we also make an observation that appears to stand in contrast with the notion that risk spillovers from the stock market to commodities are essentially a phenomenon of the financial crisis. Although the period of high volatility ended around July 2009, we show that spillovers remain persistently high until the end of 2013. One important finding in our paper is therefore that the risk spillovers from stocks to commodities are more persistent than what could be explained by the impact of the financial crisis alone. The financial crisis may have uncovered and even amplified the dependence structure caused by financialization, but financialization seems to have a strong influence on spillovers even without the general environment of contagion that was present during the financial crisis.

In this paper, we argue that this previously unobserved factor, which is mainly responsible for creating the transmission channel from stocks to commodities is essentially a style effect. The idea of an investment style goes back to Barberis and Shleifer (2003), who argue that investors form asset categories such as small-cap stocks, value stocks, and oil companies. This classification is useful to investors because it simplifies portfolio investment decisions and enables them to evaluate the performance of portfolio managers relative to a benchmark. The assets categories are often called "styles" and portfolio allocation based on styles rather than individual securities is called "style investing". Our hypothesis is that as commodities started to become a significant part of financial investors' portfolios, they were treated as a new category within the universe of stocks. As a consequence, commodities became part of a more general equity style. A similar view has been recently advanced by Cheng and Xiong (2013), who report that commodity index traders "treat commodity futures as an asset class just like stocks and bonds". As investors draw funds from one asset class and invest it into another this form of allocation generates coordinated demand shocks. Style investing therefore causes comovement among assets within a style. The assets may be unrelated on a fundamental level but the comovement is real.[5] Although investment styles have traditionally been associated with stocks and mutual funds rather than commodities, the concept of comovement being caused by an outside asset that becomes part of an investment style is not new. For instance, Barberis et al. (2005) show that the comovement between a stock and the S&P 500 index increases when a stock is added to that Index, and Boyer (2011) finds that economically meaningless fund labels have explanatory power for the return comovements of index constituents. More recently, Wahal and Yavuz (2013) show that in the past, the regression coefficient on a style factor for stocks was not significantly different from zero but started to show explanatory power beginning in 1988, which coincides with increased use of size and value categorization in mutual funds. In short, the appearance and disappearance of investment styles is a common phenomenon in stock markets and

[2] See for instance the U.S. Senate Permanent Subcommittee on Investigations (2009). More generally, financialization is defined as the increasing dominance of the finance industry and the expanding role of financial motives in the overall economy (Casey, 2011).

[3] A number of studies focus on different aspects of financialization in commodity futures markets. For instance, Henderson et al. (2015) measure the impact of financial investors on commodity spot and futures prices using data on commodity linked notes (CLNs). They thereby circumvent a common endogeneity problem between commodity prices and investment flows. Tang and Zhu (2015) show how collateral demand for physical commodities in China increases spot and futures prices. For an overview, see Irwin and Sanders (2011).

[4] The empirical literature on financialization in commodity markets concentrates on the implications for commodity returns rather than commodity risk. Our own experience from modeling spillovers in different ways suggests that many important transmissions between stocks and commodities cannot be observed in returns but are only visible in some measure of risk. We discuss this issue in more detail in Section 2.

[5] The literature points to a number of examples where the degree of comovement among individual assets is difficult to explain by fundamentals. For instance, Lee et al. (1991) find high levels of comovement among closed-end mutual funds with entirely different asset portfolios.