Finance Research Letters 21 (2017) 126–131

Contents lists available at ScienceDirect

Finance Research Letters

journal homepage: www.elsevier.com/locate/frl

Does institutional trading drive commodities prices away from their fundamentals: Evidence from a nonparametric causality-in-quantiles test

Vassilios Babalos[a,b,*], Mehmet Balcilar[c,d,e]

[a] Department of Accounting & Finance, Technological Educational Institute of Peloponnese, Kalamata, 24100, Greece
[b] Department of Banking & Financial Management, University of Piraeus, Greece
[c] Eastern Mediterranean University, Northern Cyprus, via Mersin 10, Turkey
[d] Montpellier Business School, Montpellier, France
[e] University of Pretoria, Pretoria, South Africa

ARTICLE INFO

Article history:
Received 6 August 2016
Revised 21 November 2016
Accepted 22 November 2016
Available online 24 November 2016

JEL classification:
C58
Q02

Keywords:
Commodities markets
Commodities fund flows
Quantile causality
Volatility

ABSTRACT

Motivated by the heated debate on commodities market financialization hypothesis we set off to examine the asymmetric relationship between commodities funds flows and commodities market prices by employing a novel nonparametric causality-in-quantiles. With respect to our results, while the linear Granger causality tests fail to provide evidence of causality in either direction the more robust causality-in-quantiles approach highlights partial evidence of one way causality running from market returns to commodities fund flows. Finally, substantial evidence of predictability of the variance of commodities market returns emanating from commodities fund flows is also reported.

1. Introduction

The so-called trend of commodities markets financialization (Basak & Pavlova, 2016) has been in the epicentre of a heated debated especially since the 2008 boom in the prices of a wide range of commodities. Following the events that took place in 2008 policymakers have become rather concerned over the role of financial investors' activities in commodity markets.

As Plantier (2012) pointed out in December 1998, prices of major commodities such as crude oil, gold and corn reached historically low levels. The period that followed until 2008 was characterized by an astonishing growth in commodities markets with the prices of many commodities reaching all-time highs. However this golden decade for the commodities markets has been marked by an increase in the volatility of commodities prices. Two explanations have been put forward for this development. According to the first explanation purely market forces such as the supply and demand are responsible for the boom-and-bust cycle while the other highlights excessive speculation by index investors. Proponents of the former explanation (e.g., Krugman (2008), Hamilton (2009), and Kilian (2009)), assert that commodities' prices marked an astonishing increase as a result of strong global demand mainly fuelled by the rapid growth of emerging economies such as China.

* Corresponding author.
E-mail addresses: vbabalos@teikal.gr (V. Babalos), mehmet@mbalcilar.net (M. Balcilar).

http://dx.doi.org/10.1016/j.frl.2016.11.017
1544-6123/

The situation changed dramatically when the recent global financial crisis hit the door of world economy pushing demand into lower levels. The second view attributes the large volatility of commodity prices to distortions induced by large investment flow into commodity indices. Recently, several institutional investors namely pension funds, hedge funds and mutual funds increasingly have turned their attention to commodity investments in order to diversify their portfolios and to protect against inflation. According to a CFTC staff report (2008) and Masters (2008), the total value of commodity index-related instruments held by institutional investors has increased from an estimated $15 billion in 2003 to at least $200 billion in mid-2008. Moreover a report prepared by the US Senate Permanent Subcommittee on Investigations (2009) claims that the massive index investment flow had distorted prices of some commodities such as wheat.

Moreover in early 2000s, the collapse of equity market together with the empirical finding of a negative correlation between commodity returns and stock returns amplified the belief that commodity futures could be used for portfolio diversification. As a result investment bankers started to introduce commodity futures as a promising investment vehicle for prudent investors. Shortly after, billions of dollars from institutional investors and wealthy individuals flowed into various products based on commodity indices. Increased participation of index investors is thought to have precipitated the process of financialization amongst commodities markets. As a result of this process commodity prices became more correlated with prices of financial assets (see inter alia Narayan et al., 2016) and with each other. For instance, Ji & Fan (2016) examined the interdependence between Chinese oil market and other domestic and international commodity markets revealing a long-term equilibrium relationship probably due to the marketization of Chinese oil market.

However, literature on this topic offers contradictory results for the financialization hypothesis (see inter alia (Plantier, 2012; Demirer et al., 2015)). Policymakers that stand against this trend of the financialization of commodities, claim that the upward trend of commodities prices and volatility is mainly induced by excessive speculation by these long-term institutional investors. Their argument rests mainly on the premise that the large increase in long-term investments is pushing commodity prices higher and away from their economic fundamentals. For example, Li et al., (2016) proved that the rise in crude oil prices can be explained by speculative behaviour and hedging actions of investors. Likewise, Singleton (2014) examined the impact of investor flows and financial market conditions on returns in crude-oil futures markets and concluded that speculative activity might have caused commodity prices to deviate from “fundamental” values. Therefore, a natural question arises as to what extent institutional trading as reflected in US commodities fund flows could exacerbate volatility of commodities prices. To this end, in this paper we adopt a different angle and attempt to investigate whether investment flow had distorted commodities prices by examining the causality in mean and variance between aggregate fund flows and commodities returns.

There are a number of important contributions to the literature that stem from this paper. Since the focus of our paper is to investigate the effect of institutional trading as reflected in US commodities fund flows on commodities markets returns we employ the nonparametric causality-in-quantiles test that has been recently developed by Balcilar et al., (2015). The causality-in-quantiles test that we employ in this paper, combines the frameworks of *k*th order causality of Nishiyama et al., (2011) and quantile causality of Jeong et al., (2012), and hence, can be considered as a generalization of the former. The causality-in-quantile approach employed in our study has following novelties: Firstly, it is robust to functional misspecification errors as the dependence structure between the examined time series are estimated nonparametrically; this could prove to be particularly important, as we show below that the variables under consideration display nonlinear dynamics. Secondly, via this methodology, we test for causality that may exist in the tails of the joint distribution of the variables, thus not only for causality-in-mean (1st moment). Causality tests based on conditional mean can only detect whether causality exist on average, while the causality tests based on quantiles can detect causalities in the tails which may not be detected by the linear Granger causality test. Therefore, the causality-in-quantiles approach can show us whether the causality behaves differently in the low and high commodity and fund flows returns. Finally, we are also able to investigate causality-in-variance thereby volatility spillovers, as some times when causality in the conditional mean may not exist, yet higher order interdependencies may emerge. To the best of our knowledge, this is the first paper that uses a nonparametric causality-in-quantiles framework to explore the interplay between the commodities fund flows and the commodities market returns as well as their variance.

Previewing our results we document strong evidence of nonlinearity and regime changes in the relationship between commodities market returns and commodities fund flows which provides solid ground for the use of nonparametric causality-in-quantiles test. Standard linear Granger causality test highlights the absence of dependence between commodities fund flows and market returns in either direction. However, when the most sophisticated causality-in-quantiles test is in place the picture is not the same. A one-way causality running from market returns to flows at certain quantile of the distribution of flows such as 0.50, 0.60, 0.70 and 0.80 is observed. Next we attempted to test the hypothesis that institutional trading might induce commodities’ price volatility. Our results corroborate this hypothesis since there is substantial evidence of predictability of the variance of commodities market returns stemming from commodities fund flows.

2. The data and methodology

2.1. Data

Data on US commodity funds’ flows were collected from Morningstar. To this end, starting from May of 1997 monthly data on aggregate inflows/outflows for US active and passive commodity funds and the relevant assets are available until