COMMODITY SUPER CYCLES AND CTA RETURNS

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Abstract - It is a known fact that commodities follow a long bear and bull market super cycles. So many investors have been trying to capture positive alpha and diversification by investing in commodities via hedge funds, CTAs. In this paper, we test market timing ability of these funds' managers during these super cycles. Our result is mixed. We see themarket timing ability of hedge funds in a pooled time models whereas there is none in singleindex model of calendar time.

Keywords - Hedge funds; market timing; commodities
JEL classification: C2; G11; G12; G15; G23

I. INTRODUCTION

2008-09 great financial crisis was preceded by unprecedented commodity bull market cycle. From 2003 to 2008 energy and metal prices more than doubled in real terms whereas food prices increased by 75%. The recent bull cycle has ended when the global economy slowed down forcing to demand to drop substantially. However, because of the central banks easy monetary policies and the economic outperformance of major demanders of commodities, especially China after the short crisis period, commodity prices recovered fast and resumed its bull market cycle from 2010 to 2012 (Erten and Ocampo, 2012). In recent years, commodity futures have become a very popular investment not only among mutual funds and pension funds but also among hedge fund managers. Their importance in investing comes from their high return, inflation hedging properties and risk diversification (Bodie and Rosansky, 1980, Erb and Harvey, 2006, Baur and McDermott, 2010). Most importantly there are research that shows that investing in commodity futures can generate abnormal returns (Erb and Harvey, 2006, Miffer and Rallis, 2007). One way to invest in these products is via commodity trading advisors (CTA). They manage commodity portfolios for wealth investors and/or institutional investors. This paper focuses on the ability of hedge fund managers to time commodity markets. Right before the great recession of 2008-09 worldwide economic growth peaked. The increase in economic growth since early 2000s was driven mainly by the growth in emerging financial markets (Brazil, Russia, India, China, Turkey…). This great emerging market economic growth also brought increased demand in commodities. When income level of these countries' citizens increased they started to spend more on not only technology but also all type of commodities (corn, soybean, beef, pork, copper, iron ore..). These increased demand coming from mainly these countries also attracted investor interest including hedge fund managers. Since 2008, AUM in commodity market focus funds has increased substantially. The most recent data indicating an industry-wide CTA fund AUM of $369.5 billion (2018, BarclayHedge.com). There are also 1110 CTAs serving their customers now (2018, BarclayHedge.com). Contribution of this research paperis to the literature on hedge fund performance and, more specifically, on the ability of hedge funds to time different markets or factors (Market timing ability of hedge funds, Cao and Jaysuriya (2010), Chincarini and Nakao (2010), Chen and Liang (2007), Chen (2006))

II. LITERATURE REVIEW

There are many studies that focus on the organizational characteristics and performance attributes of hedge funds (Ackermann, McEnally, and Ravenscraft (1999); Liang (1999); Agarwal and Naik (2000a, 200b, 2004); and Aragon (2007)). A hedge fund is an investment vehicle that is usually organized as a limited partnership with a relatively small number of investors who are the limited partners. Because the number of investors in the fund is restricted to those limited partners, there are often very high minimum investments.

The result is that the primary investors in hedge funds tend to be wealthy individuals, professional investors, and financial institutions. As a limited partnership, the typical hedge fund is not subject to investment restrictions imposed by regulatory authorities in the U.S. securities markets, especially the those restrictions imposed by the Investment Company Act of 1940. This organization allows the managers of the fund to pursue much more aggressive strategies than would be permissible with the management of mutual fund, which are heavily regulated by the Securities and Exchange Commission (SEC).

These aggressive hedge fund strategies include but are not limited to the use of leverage and short-selling as well as investments in derivatives, swaps, currencies, commodities, and other illiquid assets (and markets).

III. DATA AND METHODOLOGY

Hedge fund data is from the TASS database, a large commercial vendor of hedge fund return and characteristic data. As these databases are self-reporting there may be some inconsistencies (Fung and Hsieh (2009); Aiken et al. (2012); Aragon and Nanda (2012); Patton et al. (2011)). Monthly returns are for 1996 - 2018. Weused both the live and dead databases, eliminate back-filled returns, and only include funds with USD-denominated returns.Wealso partitioned the sample into two periods: one where hedge fund investing was relatively uncommon (1996-2001) and one where hedge fund investing was significantly more popular (2002-2018). Globally expansionary monetary policy that may increase risk taking by the fund managers was one of the main drivers of growth in 2002-2018 periods. Fung-Hsieh (2004) seven-factor model augmented with acommodity market index and the lag of that index to account for auto-correlation of returns (Getmansky et al. (2004); Asness et al. (2001)) will be used. Wealso collected data for several commodity market indexes for comparison and excess performance calculations. We used daily closing prices on the front month and second month of 33 commodity futures of in this study. These contracts are: cocoa, coffee, corn , cotton, oat, orange juice, soybean meal, soybean oil, soybeans, sugar, CBOT wheat, feeder cattle, frozen pork, lean hogs, live cattle, aluminum, copper, gold, lead, nickel, palladium, platinum, silver, tin, zinc, Brent oil, WTI oil, gas oil, heating oil, natural gas, RBOB, milk and lumber. In addition, we also used multiple commodity indexes both from DJUBS and GS.

Section 3

Descriptive statistics of all the indexes that we used in this study have been done. These indexes include the main DJUBS and GS index as well as indexes of agriculture, energy, industrials, soft commodities, precious metal. Fund characteristics are shown on Table 1. These characteristics are: minimum investment, management fees, lockup, high water mark, hurdle rate and redemption. There are almost 1800 funds in this study.

Table 1

Variable	N	Mean	p50	Min	Max	p5	p95	SD	Skewness	Kurtosis
MinInvest	1800	1239481	500000	0	1.00E+08	25000	5000000	3847942	14.44167	302.9877
ManFee	1795	1.796	2	0	6	0.5	3	0.8140662	1.233975	8.860262
IncFee	1792	19.25823	20	0	50	5	25	5.656621	-1.128498	10.79415
AdvNotice	1664	22.3149	15	0	180	1	60	22.18423	2.250211	11.89225
LockUp	1667	0.1391722	0	0	1	0	1	0.34623	2.08495	5.347017
HighWaterM~k	1843	0.8719479	1	0	1	0	1	0.3342385	-2.226248	5.95618
HurdleRate	1838	0.0794342	0	0	1	0	1	0.2704888	3.110519	10.67533
Redemption	1727	35.67979	30	1	360	1	90	32.82331	3.722115	30.89588

Monthly observation of hedge funds in this study such as return and all the others mentioned above is presented in Table 2. Returns are trimmed at 0.5% and 99.5% and no backfilled returns. All the other variables reflect this trimming. All the funds in this study has the following substrategies: if substartegy is active trading, then commodity agriculture, commodity energy, commodity metals, commodity multi, discretionary thematic, multistrategy and systematic diversifies. There are more than 57K observation for return where mean return is 0.004 and standard deviation is 0.0472. Mean returns varies from high of 0.233 to low of -0.186.

Table 2

Variable	N	Mean	p50	Min	Max	p5	p95	SD	Skewness	Kurtosis
Return_rf	57567	0.0043852	0.0027	-0.1858	0.2333	-0.0694	0.0848	0.0471548	0.3756839	5.863746
Assets	50771	170.1107	27	0	17360	0.9	742.46	571.8523	9.296646	119.8584
MinInvest	56602	1471303	500000	0	1.00E+08	25000	5000000	4517577	12.71923	231.4752
ManFee	56506	1.837606	2	0	6	0.5	3	0.8925143	1.454073	8.551769
IncFee	56459	19.42113	20	0	50	10	25	5.353399	-1.660898	10.04029
AdvNotice	52275	20.84073	15	0	180	1	60	21.22106	2.545415	14.36966
LockUp	52955	0.130677	0	0	1	0	1	0.3370499	2.191524	5.802777
HighWaterM~k	57567	0.8908576	1	0	1	0	1	0.3118205	-2.506962	7.284857
HurdleRate	57397	0.0873391	0	0	1	0	1	0.2823337	2.923239	9.545328
Redemption	54614	36.58798	30	1	360	1	90	35.27837	4.526935	37.14269

All hedge funds returns are re-calculated after subtracting risk free rate and all the fees.In addition, we found that DJ multi timing model has significant positive alpha. Subindexes also show that there is a significant positive betas for DJ agriculture, DJ energy, DJ industrial metals as well as DJ precious metal where as DJ grains and livestock has significant negative beta. But, some of GS indexes have different results. GS multi timing has significant negative alpha. GS industrial metalssubindex has negative beta. GS energy, agriculture and livestock have significant negative betas. Our calendar model (single index model) shows almost a completely different results than pooled model. At 5% significance level

GS multi timing index has negative alpha. eDJ industrial metalsubindex also has significant beta. In both models we observed that our adjusted R square varies between low of 0.058 to high of 0.168.Even though single index model does not show, a concrete support of market timing ability of hedge funds our pooled index clearly shows that there is a market timing ability of hedge funds and it is positive.

Section 4

CONCLUSION

In this research paper,we used both pooled and calendar single and multiple timing index models to measure if hedge funds can time the market. There is mixed evidence of market timing ability of hedge funds. The results over the entire sample period of 1996-2000 show that when we use DJUBS index for market timing ability of hedge funds in a pooled time models there is an evidence. However, in single index model of calendar time there is none. Even our GS index model shows that there is negative alpha at 5% significant level.

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