Futures Trading Opportunities: Fundamentally-Oriented and Convergence Trading

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In the article, "Commodity Futures Trading Strategies: Trend-Following and Calendar Spreads," Till and Eagleeye (2017) describe two futures trading strategies: trend-following and calendar-spread trading. In that article, the authors provide a brief description of trend-following, and they also discuss the fundamental underpinnings of two types of calendar-spread strategies. This article, in turn, covers fundamentally-oriented trading (in contrast to trend-following) and also characterizes calendar-spread strategies as a type of convergence trading.

Fundamentals-Based Trading

In fundamentally-oriented trading, market participants closely follow macroeconomic data to make subsequent trading decisions. U.S. macroeconomic data such as the amount of jobless claims and the change in nonfarm payrolls can potentially be used in trading decision-making. Such indicators have

been highly efficient in reflecting information that is important for forecasting market performance. Indeed the 2008-2009 Global Financial Crisis (GFC hereafter) was preceded by a continuous trend in the deterioration of U.S. macroeconomic data, starting in 2006. For commodity traders, an ability to anticipate the GFC would have been quite valuable, given the disastrous performance of commodities at the time: the returns on the S&P Goldman Sachs Commodity Index in 2008 were -46.5%. Figure 1 illustrates the dramatic collapse in world trade that temporarily occurred from October 2008 to January 2009 during the GFC.

Figure 1

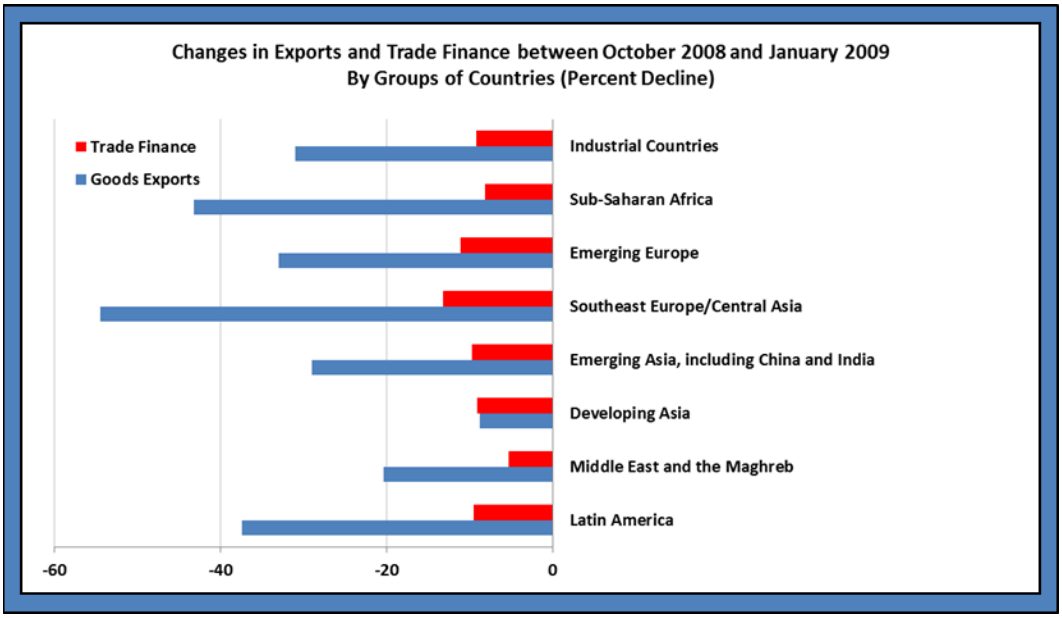


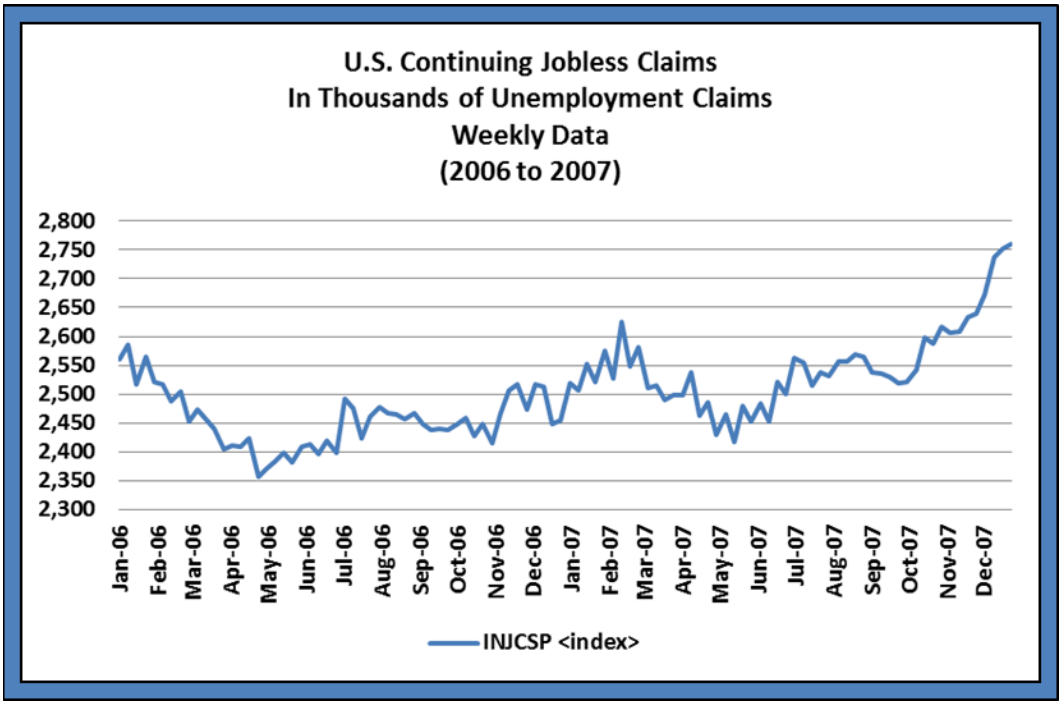
Chart based on Contessi and de Nicola (2012), Figure 1, which in turn is excerpted from Asmondson *et al.* (2011), Table 2, 3rd and 4th columns.

In what follows, we use data sets provided by Bloomberg to describe the set of macroeconomic indicators that signaled the poor macro-based performance that preceded the start of the GFC.

A detailed analysis of U.S. macro-based indicators shows that in June 2006 there were important signals of worsening economic health conditions arising as a consequence of deteriorating employment data. Labor market figures are important indicators of U.S. economic conditions. As stated by Yamarone (2012), consumer spending constitutes the largest percentage of U.S. Gross Domestic Product (GDP), accounting for roughly two-thirds of total economic output.

Figure 2 on the next page illustrates the evolution of U.S. continuing jobless claims. A close look at the figure shows that unemployment claims started to grow in April 2006, and continued an upward trend that culminated in a 9.6% increase from the end-of-September to the end-of-December 2007.

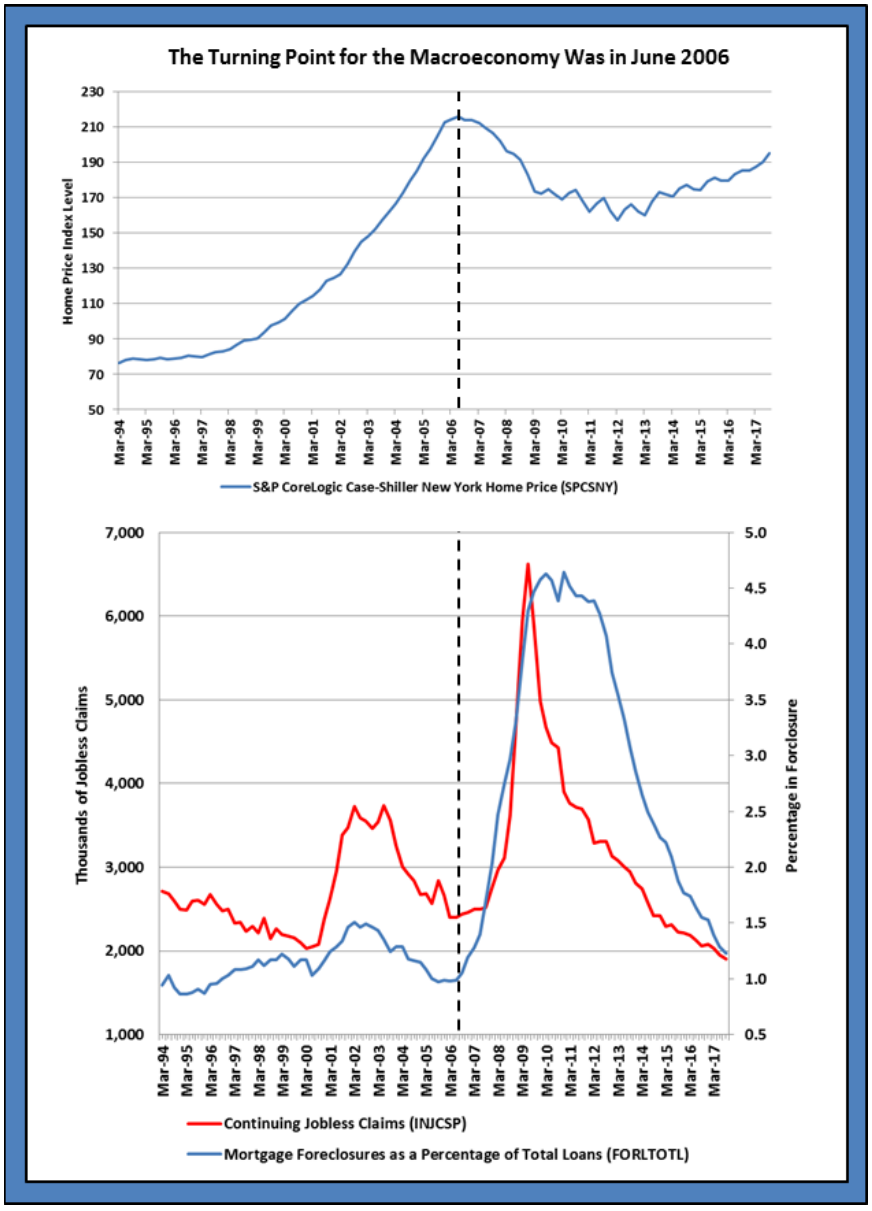
Figure 2



Source of Data: The Bloomberg.

Over the same period, there was a declining demand for homes that led to a contraction in home prices in June 2006. As home prices fell, a number of borrowers started to owe more than their homes were worth, and this led to a surge in mortgage foreclosures. The turning point for U.S. macro metrics therefore took place in June 2006. This effect is depicted in Figure 3 on the next page, which shows the time series plot for the following three Bloomberg series: (1) the S&P CoreLogic Case-Shiller New York home price index, (2) mortgage foreclosures measured as a percentage of total loans, and (3) continuing jobless claims.[1]

Figure 3
The Turning Points for Three Macroeconomic Variables Prior to the 2008 Global Financial Crisis
Quarterly Data
(March 1994 to September 2017)

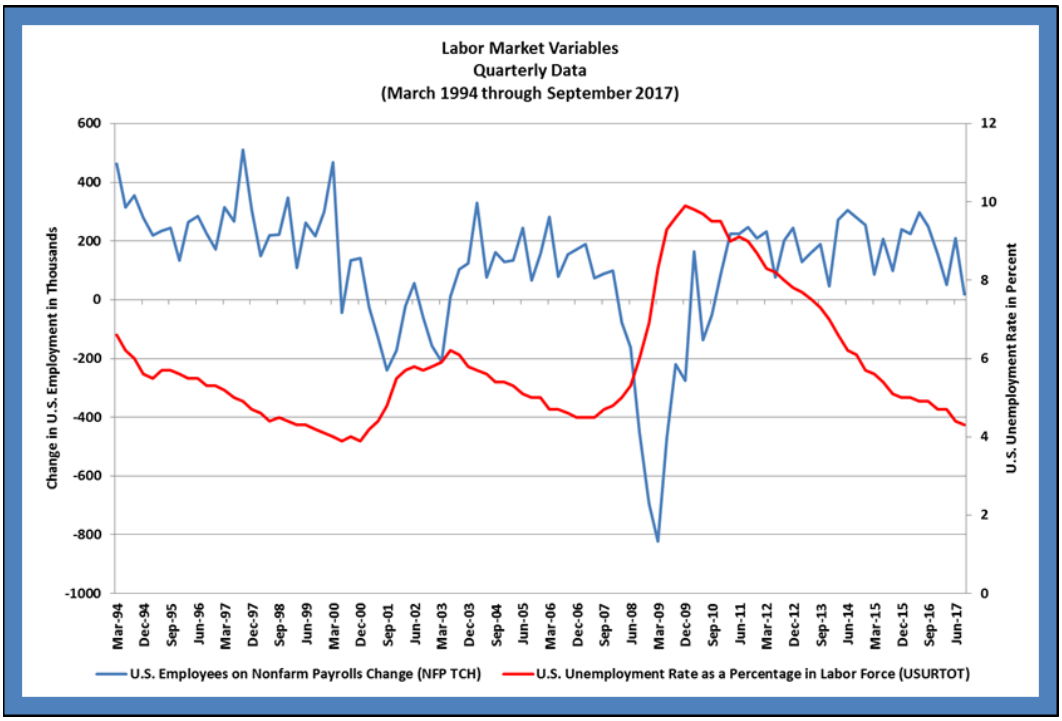


Source of Data: The Bloomberg.

After the 2006 turning point, changes in nonfarm payrolls, which measure the net creation of non-agricultural employment in the U.S., exhibited a downward trend, later translating into about 34-thousand and 20-thousand employment losses in July and August 2007 respectively. Worsening labor market conditions were also manifested in the U.S. unemployment rate, which increased from 4.4% to 5.0% from May 2007 to December 2007. This pre-GFC employment deterioration is illustrated on the next page in Figure 4, which includes time series plots of both the change in U.S. employees on non-farm

payrolls as well as the U.S. unemployment rate. In December 2007, the worsening in U.S. macroeconomic conditions continued apace, and the U.S. economy entered into a recession. This latter fact is documented on the next page in the second row of Table 1, which shows the dates of turning points in different business cycles as decided by the Business Cycle Dating Committee of the National Bureau of Economic Research. That said, the official announcement of this turning point did not take place until December 2008.

Figure 4



Source of Data: The Bloomberg.

Table 1

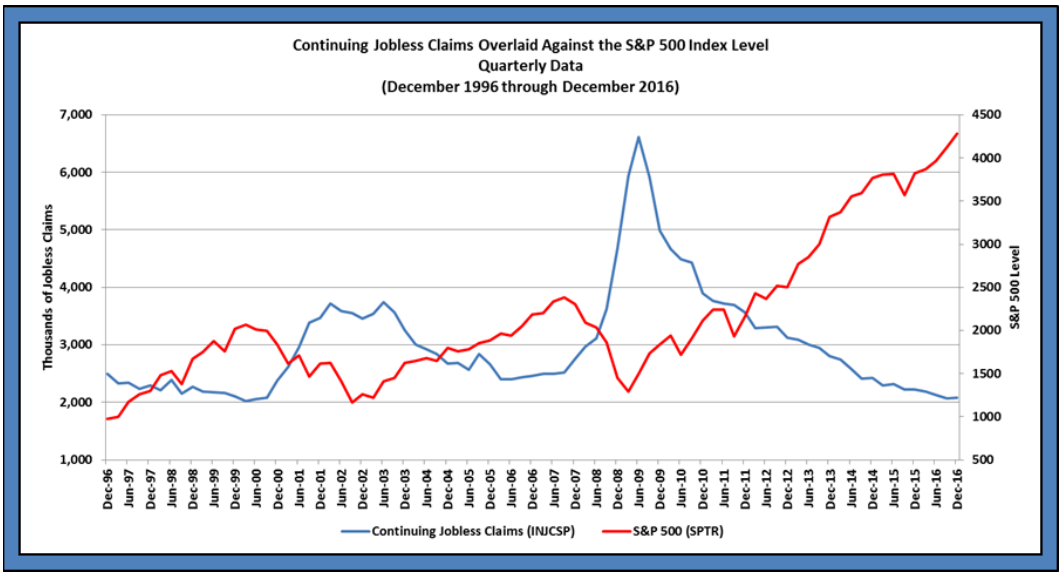
Turning Point Dates of the U.S. Business Cycle with Their Announcement Dates

Turning Point Date	Peak or Trough	Announcement Date
June 2009	Trough	September 20, 2010
December 2007	Peak	December 1, 2008
November 2001	Trough	July 17, 2003
March 2001	Peak	November 26, 2001
March 1991	Trough	December 22, 1992
July 1990	Peak	April 25, 1991
November 1982	Trough	July 8, 1983
July 1981	Peak	January 6, 1982
July 1980	Trough	July 8, 1981
January 1980	Peak	June 3, 1980

Source of Data: National Bureau of Economic Research.

The previously described sets of data provided early signals of subsequent sizable market losses. As depicted in Figure 5, the S&P 500 equity market index started falling at the end of 2007, after U.S. labor market indicators had already begun signaling deterioration.

Figure 5



Source of Data: The Bloomberg.

One year later in the fall of 2008, "the largest fall in international trade since the Great Depression" occurred, "as imports and exports contracted by nearly 30 percent relative to GDP," and as reported by Contessi and de Nicola (2012). And according to the International Energy Agency, oil demand in 2008 correspondingly fell for the first time since 1983. Thus, we can see that a careful examination of U.S. macroeconomic data would not have only been useful for equity trading, but also for commodity trading.

Convergence Trading

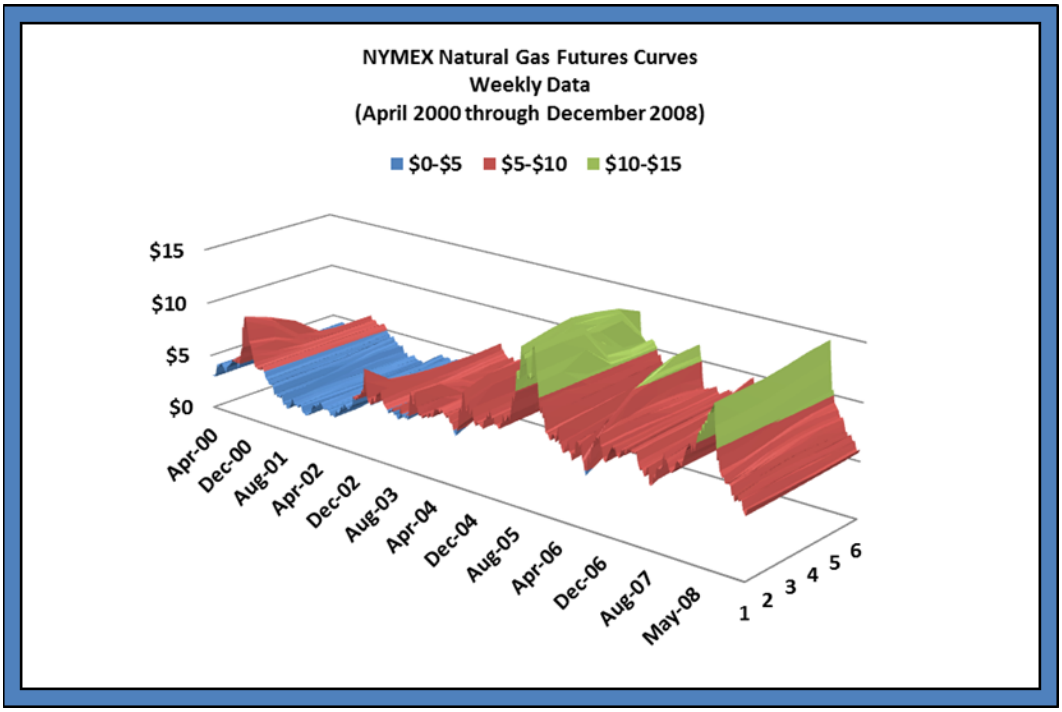
In addition to approaching the markets from a macroeconomic perspective, market participants also adopt purely mathematic approaches to trading. For example, convergence trading is a popular strategy pursued by hedge funds. This strategy, also known as pairs trading, involves entering into simultaneous long-and-short positions in highly correlated markets that are trading beyond a threshold spread level, which are then closed if and when the spread relationship mean-reverts. Pairs trading strategies are therefore designed to earn profits from relative mispricings of closely related assets. While pairs trading strategies are mainly applied to equity prices (see for instance, Gatev *et al.,* 2006), they can also be constructed with commodity price spreads that are linked by common fundamentals, as discussed in Kanamura *et al.* (2010).

Kanamura *et al.* (2010) propose a profit model to understand the effects of volatility and mean reversion in the profitability of *calendar-spread trading*. In review, within all commodity futures markets a different price typically exists for each commodity, depending on when the commodity is to be delivered. For example, with natural gas, a futures contract whose delivery is in October will have a different price than a contract whose delivery is in December. Accordingly, a futures trader may trade the spread between the October versus the December futures contract, which is one type of calendar spread.

In Kanamura *et al.* (2010)'s empirical application, the authors examine the historical performance of spread trading strategies in the energy markets using historical NYMEX prices for crude oil, heating oil and natural gas prices. They find that total profits from natural gas and heating oil spread trading are positively affected by seasonality. More importantly, natural gas spreads generate the largest total profits while heating oil and West Texas Intermediate crude oil spreads exhibit the second and third highest excess returns. Similar conclusions are obtained when performance is measured in terms of Sharpe ratios or risk-adjusted returns. The authors also demonstrate that pairs trading performance is related to volatility and the speed of mean reversion.

Because the natural gas market exhibits higher volatility and higher mean reversion than heating oil or crude oil spreads, natural gas pairs trading delivers higher profitability, according to the authors' study. Figure 6 illustrates just how volatile the outright price of U.S. natural gas futures contracts and their calendar-spread relationships have been, as referenced in the Kanamura *et al.* (2010) study.

Figure 6



This graph illustrates the price evolution of six delivery months in the U.S. natural gas futures market, tracing from the first- through sixth-month contracts. The x-axis is the date of observation; the y-axis is the delivery month; and the z-axis is the price level for each natural gas futures contract in dollars per MmBtu. The color key is the price level of natural gas in five-dollar increments, as shown on the z-axis. Presenting data in this fashion is based on an exhibit in Kanamura *et al.* (2010).

Source of Data: The Bloomberg.

By way of further reference on natural gas spread trading, Till and Eagleeye (2017) describe the fundamental reasons for the historical profitability of this calendar-spread strategy while Till (2017) provides a cautionary note on the limits to scalability of this strategy based on past hedge fund debacles.

Conclusion

Gaining expertise in derivatives markets typically occurs by working in firms that have strict rules on keeping their trade secrets proprietary. This article aims to help fill the knowledge gap about these markets by providing useful information on two types of trading strategies.

Endnotes

1 For a detailed account of the effect of the fall in home prices on mortgage foreclosures, please see Bernanke (2013).

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