University of Zurich

Department of Banking and Finance

Plattenstrasse 32

CH-8032 Zürich

Prof. Alexander F. Wagner, Ph.D.

Diversification Benefits of Commodities in Institutional Investor Portfolio

The effects of different commodity investment instruments

during different periods of financial market conditions

on an international diversified institutional investor portfolio

Bachelor Thesis

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Marco Sbalchiero

Abstract

This thesis investigates whether an investor is better off by including commodities during different financial market periods in a portfolio of traditional asset classes. It first introduces different investment instruments to get exposed to commodity prices, summarizes the findings of existing literature, and constructs portfolios for the six sub periods. It is found that commodity characteristics of prior periods, namely low correlation with equity and the effect of lower volatility in a portfolio cannot be confirmed for the most recent periods. The effect of higher expected returns and higher sets on the efficient frontier is verified however. Finally, commodity-based exchange-traded notes appear to be attractive instruments in portfolio diversification.

Executive Summary

Discussion

There has been a fast growing interest in commodities as an investment class in recent years. Because of the high costs of directly holding physical commodities, investors have traditionally relied on commodity futures (either directly or through investment management firms) to obtain a commodity exposure. Recently, commodity-based exchange-traded products have gained public attention and have enabled growth in commodity investing. The enormous success of these exchange-traded products is shown by the huge investment in the products which reached 125.8 billion dollars by April 2010. This increase in interest in commodity investment together with global changes of emerging market activities and attractiveness of other alternative asset classes alters important factors, assumptions and fundamentals that in the past have dominated the valuation of commodities as an investment alternative. This calls the diversification benefits of commodities into question. The literature of the past 30 years pointed out four primary beneficial criteria for commodities as a portfolio constituent: Comparable or higher returns to other asset classes, lower deviation of the portfolio return, hedging against inflation, and a diversification benefit due to low correlation with traditional asset classes. During the financial crisis in 2008 however, several observations and circumstances did not confirm these beneficial criteria. Among others, an extensively increased correlation between commodities and traditional assets classes of stocks and bonds was found. Thus, the observations in the last financial crisis in 2008 together with the previously mentioned progresses of increasing investor interest, emerging market demand and changes in other alternative asset classes, induced numerous authors to question the traditional benefits of commodities which aroused anew the discussion of the convenience of commodities in portfolio context.

Objective

The objective of this thesis is to introduce an institutional investor to the asset class of commodity as a broad investment spectrum with various subareas, and to show him what impacts the different characteristics and peculiarities of commodities have on his traditional portfolio of stocks and bonds. Therefore it is disclosed to an investor what possibilities there are to get exposed to commodities, with special attention to more recent available instruments, and what demographic and economic reasons exist which would justify an investment in commodities in terms of expected positive returns. Furthermore an investor gets acquainted of attributes, effects and progresses of commodities which were stated by researchers in the last 30 years. In the last section international diversified portfolios during different periods of

financial market conditions and with different risk aversion levels of an investor are constructed, and it is illustrated to an investor what effect on the risk-return relation the incorporation of commodities in his traditional portfolio of stocks and bonds during the last 25 years has had.

Approach

Therefore this study investigates whether an investor is better off by including commodities in a portfolio that consists of traditional asset classes, namely stocks and bonds. To this end, the study uses daily and monthly data from 1987 to 2012 and assesses the impact of incorporating different long-only commodity indexes, managed (commodity) futures indexes, commodity exchange-traded funds, and commodity exchange-traded notes into portfolio optimization problem with weight constraints and for various risk aversion levels of an investor in the mean variance framework. It departs from previous literature in two aspects. First, the longer time period is fractioned into six sub periods defined by economic conditions, which are specified using government fund rates, and for every sub period a separate portfolio is constructed. Second, a wide range of different commodity investments are being analyzed, including four passive indexes, two managed indexes, three exchange traded funds and two exchange traded notes.

Results

Overall, the findings strongly relativize some popular investor's thinking of benefits from investing in commodity futures. The low correlation between equity and commodity are confirmed in the earlier periods until the beginning of the 21st century, but in the last ten years the correlation has increased dramatically. It is also shown that correlations between commodities and equities are highest in periods of economic regression. It cannot be confirmed that commodities throughout lower the volatility of the return in a portfolio, but it is observed that portfolios with commodities have higher return in every beheld period.
Thus, the efficient frontiers for portfolios with commodity show a better risk-return ratio than portfolios with stock and bonds only. Among the recent accessible commodity investment instruments, in particular commodity exchange-traded notes appear to perform well.
The results do confirm however, that commodity investments in portfolio context are still attractive instruments for alternative investing and diversification. As mentioned above, particularly the new option of exchange-traded notes (ETNs), tend to yield some exceptional benefits in an international diversified portfolio allocation.