

## AGRICULTURE

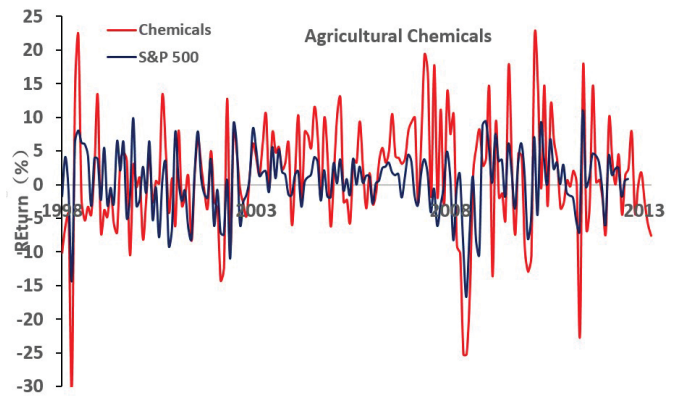
### Assessing Returns and Risks of Three Subgroups of Agriculture Equities

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This study examined returns and risks of three sub-industries of agricultural equity from 1998 to 2013, including the agriculture chemicals sub-industry, packaged food and meat sub-industry, and agricultural products sub-industry using Global Industry Classification Standards. Although there are some studies tracking the returns and risks of farmland in the wake of the 2008 financial crisis (after which numerous institutional investors were drawn into farmland), there are few studies examining non-farmland agricultural assets, especially the differences and correlations among sub-industries within agribusiness industry. Therefore, it is very interesting to see how the agricultural equities returns performed over years and whether exposure to farmland via equity of agribusiness stocks has a relatively low risk compared to the market. Data including monthly returns and other information for each stock in these three sub-groups as well as monthly returns for S&P 500 were downloaded from the Wharton Research Database. Each individual stock return was compiled to generate weighted monthly returns for the three sub-industries using market capitalization as the weight. The monthly returns for each sub-industry were plotted in a graph compared to the general market, which is represented by S&P 500. Risks for each sub-industry were measured by the beta value, which is an indicator of risk from the Capital Asset Pricing Model.

The results showed that during 1998-2013, agricultural products had a beta of 0.455, packaged food and meat had a beta of 0.436, and agricultural chemicals had a beta of 0.934. The results suggest that agricultural products and packaged food showed lower risks and lower returns while agricultural chemicals showed similar returns and risks compared to the general market.

*Research advisor Timothy Baker writes, "Anbo Wang's research created historical indices of stock market returns for several categories of agribusinesses, and uses these indices to measure the rate of return and risk. The data Anbo has created can be used to determine the value of agribusiness stocks to farm and nonfarm investors."*



The graph showed that the historical monthly returns return of agricultural chemicals compared to the general market, which is represented by S&P 500.