ECON 439: Macroeconomic & Finance Forecasting
Paper 3 Proposal
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Introduction

As an important global commodity, Oil is believed to have a pronounced and profound impact on both the macroeconomy and the equity market. There is a rich tradition of literature on the impact of oil prices shocks on the macroeconomy. On the other hand, although it picked up later, there is also a number of studies done on the impact of oil prices shocks on equity markets. However, most of these studies primarily focus on developed equity markets and the equity markets from oil-exporting gulf countries. Generally, it has been demonstrated that the equity markets of net oil importing countries tend to contract in response while net oil exporting countries tend to observe rallies. For my third paper, I would like to examine if oil prices shocks can predict the returns of the Chinese A-Share equity markets. I will be examining both spot and future prices. My null hypothesis is that there is no oil effect on the movement of Chinese A-Share markets.

Literature Review

In 2008, Cong et al. (2008) employed a Vector-Autoregressive Model to analyze the relationship between oil prices and share returns on both the Shanghai Stock Exchange and the Shenzhen Stock Exchange. They discovered that there is very little relationship between the two, except for manufacturing and petroleum companies.

Driesprong et al. (2008), on the other hand, significant predictability world wide. They found that stock market returns can be predicted by oil prices for up to 6 trading days. Interestingly, they found that this generally only applies to sectors where it is not easy to immediately calculate the impact of oil price shocks.

Data

I looked at the data available on SP’s Capital IQ, and I decided that I will be using FTSE indices as my variables for market returns. In addition a China index that captures the entire A-share universe, FTSE has also constructed sector specific indices that spans sectors such as technology, food producers, and automobile. This will allow me to uncover sectoral specific effect from oil price shocks.
For spot and future crude prices, I will be using the three most followed benchmarks: Brent, West Texas Intermediate, and Dubai.

To control for changes in economic activities and exchange rate fluctuations, I will also be including interest rate, exchange rate, and industrial production in my model. These information can be acquired from the People’s Bank of China and the National Bureau of Statistics from China.

**Empirical Strategy**

There two models that I am currently considering:

1) **Driesprong et al.’s Model**

   \[ r_t = \mu + \alpha_1 Oil_{t-1} + \epsilon_t \]

   This basic regression can then be expanded to:

   \[ r_t = \mu + \alpha_1 Oil_{t-1} + \alpha_2 Oil_t + \alpha_3 Oil_{t-2} + \alpha_4 r_{t-1} + \epsilon_t \]

2) **Cong et al.’s Model**

   \[ y_t = A_1 y_{t-1} + A_2 y_{t-2} + \ldots + A_p y_{t-p} + \epsilon_t \]

   \( y \) is a 4x1 column matrix that consists of stock market returns, oil prices, interest rate, and industrial production.

   Regardless of which model I pick, I will vary the number of lags to determine the strength of predictability across different time horizons. If I find a strong effect on the overall equity market or in some specific sectors, I can then construct an ”Oil Strategy Portfolio” and compare it’s performance to a buy-and-hold equity portfolio.

**Next Steps**

For my robustness check, I am currently thinking of including the French-Fama factors—value and size. I have not thought of which variables to use as proxies yet, but I think it might be interesting. On top of that, I also intend to study if there is an asymmetric effect of oil price shocks since some past literature has shown that a price hike has a larger impact than a fall in price. If I have the bandwidth, I am quite keen to study if there is volatility spillover from the oil market to the chinese stock market.

**References**
