

The Predicting Power of Investor Emotion

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Abstract

Though recently many studies have been conducted to validate the relationship between investor's emotion and the stock price changes. Exploiting the relationship for predicting purpose has driven way less attentions than it deserve. In this paper, we summarized the prevailing methodologies conducted in analyzing the relationship between stock changes and investor emotion and some important conclusions. Based upon those conclusions, we exploited the predictability of the investor emotion on abnormal financial returns via LSTM Neural Network. Our result indicates that the investor emotion has tremendous advantages in predicting the financial returns....

Keywords: Science, Publication, Complicated

1. Review of Current Methodologies

Someone did blablabla....

2. Predicting the "Abnormal Returns"

2.1. Motivation for Analysis

$$R_t = \alpha_t + \beta * R_m$$

As... has claimed, the CAPM model is great in decomposing the financial returns into the normal one (related to the market) and the "abnormal one" (related to individual events). Many investors have profited from concentrating on predicting the abnormal return (by implementing the alpha strategy). Successively Predicting the abnormal return then could have tremendous meaning in beating the market. Though the investment strategies differ from each other, they all reach to one final destination of making

transaction and for all the transactions made, there are emotion drove behind those decisions. Thus exploiting the investor emotion to predict the returns doesn't contradict with any validated investment (example: foundation analysis, technical analysis or quantitative analysis). If the predicting is accurate, then it is possible to further decompose the abnormal returns into the emotion category and thus rewrite the pricing formular of individual stocks.

2.2. Data Gathering

2.2.1. Emotion Data

Doing emotion analysis from text is taxing and it involves a lot of subjectivities. As... has claim, the perfect emotion classifier doesn't exist and thus, in our analysis, we utilized the emotion data classified by ... In the paper of..., the classification has been accredited 75% accuracy and is sufficient to validate the predictability of investor emotion. Emotion data Can be download from [data](#).

2.2.2. Returns Data

As metioned before, we concentrated on predicting the abnormal return. Thus we first decompose the return of individual stocks via CAPM model.

$$R_t = \alpha_t + \beta * R_m$$

The α value is the abnormal return that we are attempting to predict because the individual stock emotion is more likely to affect the alpha value than the market as a whole.

So we first construct a moving average for the daily series of the alpha return of individual stocks. It is important to note that predicting the moving average of alpha value is equivalent to predicting the alpha return on specific day because suppose at today, we know tomorrow's alpha moving average then by having the access to the histrocial alpha data, we can actually solve for the next day's specific alpha returns.

After computing the 30 days moving average, we compare the path of the 30 days positive emotion ratio moving average and the 30 days' moving average alpha.

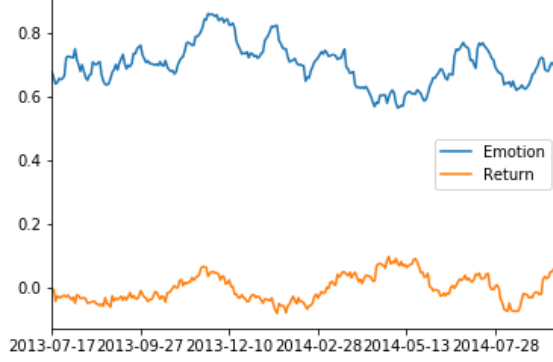


Figure 1: Comparison

As we can see, there are some of the relationships between the emotion and the alpha value, and we further calculate the correlation coefficient between them:

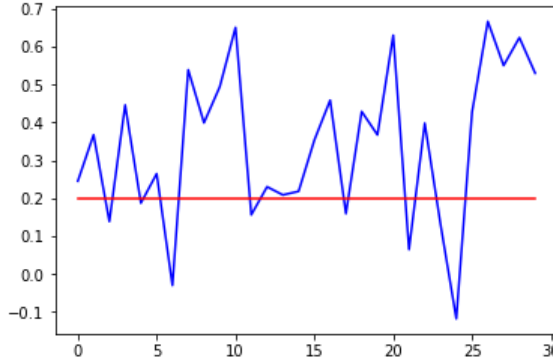


Figure 2: Correlation

For the 30 stocks we chosen, most of them has the correlation above 0.2.

2.3. *LSTM—predicting Model*

In the Machine Learning field, LSTM has been proven its effectiveness in predicting time series data. Here we adopted the same model to predict the alpha returns.

The input values are three variables: Total number of positive emotion, total

number of negative emotion, total number of neutral emotions.
The out put value is the 30 days moving average alpha value of returns.
The predicting result is:

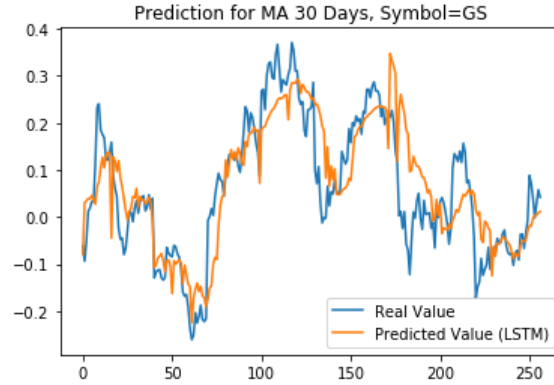


Figure 3: Prediction of LSTM

We can see that we have achieved very promising result in exploiting the predictability of investor's emotion.

3. Discussion

3.1. Overfitting

We used drop out neural network to see that if we drop certain neuros in the training how does the result differ from the original ones....

4. Conclusion

It has predicting power...